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No. 45

THE LONDON NATURALIST

**the Journal of the
LONDON NATURAL HISTORY SOCIETY**

Published : July 1966

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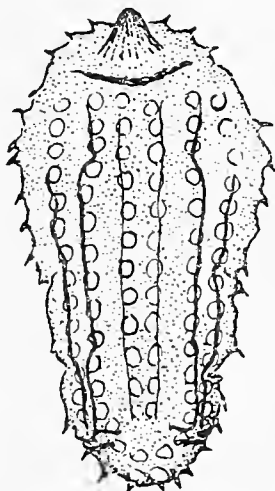
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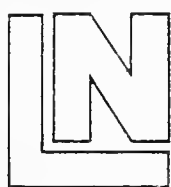
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LONDON NATURAL HISTORY SOCIETY

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CONTENTS

	PAGE
Officers for 1965	5
Report of the Society for 1965	6
The Society Today: Presidential Address—V. F. Hancock ..	9
Botanical Records for 1965—J. E. Lousley	17
A Survey of <i>Calystegia</i> in the London Area: Fourth Progress Report 1965	22
Botany Section Plant Mapping Scheme: Progress Report for 1965..	25
Algae in St. James's Park Lake—B. A. Whitton	26
Notes on Mammals of the London Area During 1963–1964—J. A. Burton	29
The Distribution of Weasel, Stoat, Common Shrew, Roe Deer, Water Shrew and Mole in the London Area—J. A. Burton ..	35
The Hedgehog in London—P. Morris	43
Survey of Bookham Common: Twenty-Fourth Year Progress Report for 1965.. .. .	50
Some Additions to the List of Flies (Diptera) of Bookham Common—L. Parmenter	56
Hemiptera-Heteroptera of the London Area: Part III—E. W. Groves	60
A Review of the Macrolepidoptera of the London Area for 1964–1965—C. G. M. de Worms	89
A “Pug-headed” Perch (<i>Perca fluviatilis</i> L.) from The River Lea—D. Marlborough and B. S. Meadows	98
Excavations at Orchard Hill, Carshalton—D. J. Turner	100
Conservation in the London Area in 1965	105
Statement of Accounts	108
Books	110
The Library	116
Instructions for Contributors	117

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Information about the Society may be obtained from the General Secretary
Mrs. Small, 13 Woodfield Crescent, W.5.

Report of the Society for 1965

AT the end of October this year the total membership of our Society stands at 1,659, which represents an increase of thirty-five over the corresponding figure for the previous year.

It is with regret that we record the deaths of the following members during this year:—

L. Denyer-Green, Miss E. Frere, Miss P. E. F. Hare, Dr. Helen MacKay, J. Mclay, Mrs. H. M. Rait-Kerr and Mrs. H. F. Warren.

Two of our members received recognition this year for their services to Natural History. Lord Hurcomb was awarded the Silver Medal of the Zoological Society of London for his work in conservation and Mr. C. A. Morris the Golden Medal of the R.S.P.B. for his services to bird protection.

As reported last year we have received permission from the National Trust to erect and maintain a hut on Bookham Common for the use of our survey team. This hut, which was purchased with a donation of £100 from an anonymous member, has now been installed and furnished and will be named the Research Centre. We owe our thanks to many members who have helped on this project, but particularly to Mr. C. P. Castell, who produced the original idea, to Dr. G. Beven and Mr. F. C. Reeves who have worked hard to transform a bare hut into a Research Centre and Mr. R. Brown who supplied and installed the electrical fittings. A small library of standard reference books will be purchased for use at the Centre with part of another donation of £100 from an anonymous member. It is hoped that these improved facilities will encourage more of our members to participate in the research and survey work at Bookham Common.

We continue to be concerned about the proposals for the redevelopment of the Lea Valley based on the report issued by the Civic Trust. Two of our members, Mr. J. Crudass and Mr. B. S. Meadows have carried through a survey of the Lea Valley from Ware to the River Thames and compiled a comprehensive report. This report contains our recommendations for the protection of certain areas of importance to naturalists from redevelopment and proposes the creation of Nature Reserves.

Copies of this report have been distributed to all Ministers of the Crown and Members of Parliament concerned, the Greater London Council as well as to other influential bodies and people.

We have received a grant of £100 from the Parliamentary Grant-in-Aid Fund administered by the Royal Society towards the cost of our publications. Members should note, however, that this grant was coupled with a firm request to consider an increase in our Society subscription since no further grant will be made to cover increases in printing costs.

Our colour film "London's Birds" has been shown eight times in S.E. England this year and was to be shown at the New Gallery Centre, Regent Street, on April 26, 1966 as our contribution to National Nature Week. The master copy has been donated to the National Film Archives to be preserved as an historic record.

A collection taken in aid of the appeal to save Upper Teesdale from inundation realised 15 guineas.

A Gestetner duplicator has been loaned to the Society for three years by Mr. Bruce Colman and this is now installed at Ealing Library.

Although some have questioned the place of Archaeology in a modern natural history society, judged by attendances at formal, field and particularly at informal gatherings our Archaeological Section is meeting a real and growing demand from Society members. Particularly gratifying too was the interest shown by the public in the Symposium and Exhibition on Recent Excavations in Southwark, arranged in co-operation with the Southwark Borough Council. At the Symposium, the chair was taken by Mr. N. Cook of the Guildhall Museum and the success of this event was in no small measure due to the hard work of the staff of the Cuming Museum in making the arrangements.

Two of our members gave talks on their own research work, Mr. Laithwaite on the medieval houses of Burford and Miss I. Darlington on Wyngaerde's Views of London. Several stalwart members have attended the practical sessions on the pottery from Southwark sites, but help from other members would be appreciated.

A Grid Recording scheme for the plants of the London area has been started by the Botanical Section, and Mr. P. C. Holland will act as director of this project. It is hoped that as many members as possible will participate in the work of recording. The *Calystegia* survey has continued and it is proposed to collect records for one more year.

Perhaps the most rewarding event of the year was the week spent with members of the Botanical Society of the British Isles at Brantwood, the Ruskin Natural History Centre on Lake Coniston where we were privileged to be led by Canon G. A. K. Harvey on excursions in the surrounding countryside.

The Ecology section has always held itself responsible for covering aspects of natural history which are not specific to other sections of the Society and this has been manifested this year by several articles in the *London Naturalist* on the distribution of mammals, reptiles, amphibians and fishes in our area. This important work can only really succeed if individual members co-operate by sending in field information to the Recorders.

The preparation of a list of insects found in the London Area would seem a formidable task, but our Entomological Section have made a start and continue to make steady progress. An excellent series of field meetings was backed up by lectures given by members on their experimental work and informal meetings for discussion of subjects of interest to entomologists.

Over twenty forays into the forest were made by members of the Epping Forest Field Section during the past year, while at an indoor meeting Mr. K. Hoy gave a fascinating lecture on the changes in the Forest from the Stone Age to the present day.

No Easter Field Meeting was held by the Geology Section this year, but a week-end Field meeting was arranged for the end of April. This was based on Cheltenham and the leader was Mr. Butler. On the Saturday members were taken to Leckhampton Hill to see The Devil's Chimney and various quarries where exposures of Lower Freestone and Upper Inferior Oolite, including Clypeus Grit were examined. On the Sunday members went to Cleeve Hill for Middle Inferior Oolite Beds and later Cooper's Hill Quarry was visited to see a fine section from Pea Grit up through Middle and Upper Inferior Oolite into Chipping Norton Limestone of the Great Oolite.

The Field Meeting by coach to Oxfordshire under the leadership of Miss Kennedy was again a great success. Members visited Sir Winston Churchill's grave at Bladon, as well as quarries in the neighbourhood. Other successful field meetings included an eleven mile walk from Liss to Petersfield, passing Upper Greensand, Chalk, Gault and Lower Greensand, under the leadership of Dr. Middlemiss.

Demonstrations arranged during the year included a fascinating visit to the Palaeontological Laboratory of the British Museum and a pre-view of the Aveley Elephants.

Variety has been the keynote of the indoor formal meetings of the Ornithologists, maintaining a balance between the so-called serious and more popular sides of this branch of natural history. Subjects included the birds of Norway, Water birds of the World, an exposition on Radar Ornithology, an evening devoted to identification of Warblers and accounts of expeditions to Tenerife and Morocco.

The Informal meetings are once again in full swing at a new venue, The White Hart in Theobalds Road. These have proved to be of great interest and value in the diversity of subjects chosen for discussion. Informality as the name implies is the pattern and members are encouraged or rather expected to take part in discussions and to show their own films or slides.

Regrettably due to a change in the mode of operations birds have to a great extent deserted Beddington, as a result of which ringing has declined considerably. Ringing instruction at Beddington has been discontinued and the future of this station is not very bright.

The second Annual Dinner of the section, held at the Horseshoe Hotel, was a great success and another is planned for next year.

The publication of the Bulletin is now accepted as an important part of the section's activities and our thanks are due to the persistent efforts and hard work of the Editor in getting this venture established.

By popular demand five week-end meetings were held during the year, repeat visits to Cley in March and November, a visit to Dorset over the Easter vacation, a week-end in Suffolk spent at Minsmere and Havergate Reserves, and an autumn visit to the Chichester area. Their success was as much social as ornithological and they were greatly enjoyed by all the members who attended. In September a week-end for junior members was organized at the Bradwell Observatory.

The South West Middlesex group reported that an arrangement for informal meetings after an evening lecture has proved a very welcome innovation. Four evening outdoor meetings held during the summer months were particularly well attended. A representative from the Group attended the inaugural meeting to establish a Council for the Arts for the new Borough of Hounslow.

The Society Today

By V. F. HANCOCK, M.B.O.U.

(*Presidential Address delivered December 7, 1965*)

THE poet Blake said "The fool sees not the tree the wise man sees" and as field naturalists we set out to acquire wisdom to a lesser or greater degree about the tree, at the same time doing our best to ensure that it isn't needlessly cut down. As enthusiastic naturalists we are members of this Society to learn how to name and recognise the facts of nature, how to record the facts, how to understand the facts and how, when occasion offers, as in conservation, to use these facts we discover.

But first, what is the Society?

It is 1,600 members, its printed and manuscript records, the long tradition of its former members great and small who have worked together to extend their own knowledge and to leave a permanent record of our area. In addition, to enable us to "tick" we are a complex organisation with an elaborate administration, which, to some, absorbs too much of our time and energy. In the first 8 pages of your programme you will find over 170 names listed: some are duplicates, that is, members doing more than one job. All the same, from a total membership of approximately 1,600, 160 are working—some extremely hard—on committees, reading circles and maintaining the Society's records. 160—one member in ten—is required for these administrative chores, and this large proportion appears at first sight to be excessive. It isn't, however, when one considers our activities in a year: 54 formal meetings, about 40 "informals" and over 180 field meetings, all of which have to be co-ordinated if there are not to be ten lectures in one week and then no more for a month or two.

This is not to be a discourse on personalities. Selection would be invidious and, in any event, I am not the one to describe colleagues interestingly in pithy thumbnail sketches. Nonetheless, I must mention Gordon Potts and his delicate back-room job of booking all the halls and compiling the Programme. Next to the Secretary and Treasurer in importance in our administration, this job has no glamour; much patience and tact are needed—and provided—by the efficient and unassuming Mr. Potts.

Suitable halls at rents we can afford to pay are hard to find and in great demand, so we can no longer fix Tuesdays as our regular night for formal meetings. Also many caretakers and porters these days expect to leave the premises in their care comparatively early. It was because of this—our meetings had to be wound up by 8.30 p.m.—that we left the London School of Hygiene and Tropical Medicine. You will appreciate that in itself the booking of halls is quite a major undertaking.

To the planning of the Programme must be added planning for the future, the maintaining of records, the production of our publications, the running of the library and last but not least, conservation and co-operation with other Societies.

I do not propose to go into detail regarding our administration or our finances. We all know that our specialist sections and locality groups control their own affairs, working through Council with its 40 members and its committees. Unhappily, we have no headquarters, and even if we had, we could not afford a permanent staff. Fortunately, what we do have is an unique General Secretary, Mrs. Small, who, in her own right,

is a tireless field botanist who visits virtually all parks and commons in our area. It is impossible briefly to describe her activities. I would just like to suggest that, whilst each section is a power-house, Mrs. Small, working on behalf of the whole Society, is both a very intensive generator and a central exchange, keeping in close touch with the sections and injecting them with fresh energy and drive if they appear to be in need. Mrs. Small is the person who by some magic finds the right man or woman for the right job at the right time. She represents not only the Society, but all the South of England Societies on the Council for Nature, and is a live wire on its conservation committee. Shortly Mrs. Small intends to give up some of her duties: to say that this poses a major problem for the Society is a gross understatement. How the gap is to be filled is a big headache for the Administration and Finance Committee.

Our present Rules give us a brief and purely scientific aim, described in this way so that we should have no difficulty in being accepted by the Inland Revenue as a Charity and thereby being exempt from Income Tax. But to many members natural history is a hobby, a mental and physical refreshment rather than a pursuit demanding lifelong devotion and full concentration of their powers. A large number of our members regard natural history as a recreation, a relief from workaday life. But whatever the degree of the scientific work we do, the Society offers to all of us association with others like-minded—in the company of kindred spirits we can increase our knowledge, solve our difficulties and sharpen our enthusiasms. There are too many of us all to know one another—only Mrs. Small can approach this ideal. How many we never see at our meetings nor hear from is uncertain. Some belong only for the journals or to encourage a worth-while cause, some because they participated actively with us in days gone by and are grateful for the friendships then formed. But the majority are still actively involved with the Society in one way or another.

At this point I should like to refer to you the article on bird-watching by one of my illustrious predecessors, Dick Homes, in the monumental *New Dictionary of Birds*. Here, *inter alia*, he succinctly compares the different types of “bird-watcher”, and their varying aims and motives in pursuing this popular study, from those who look at birds for their own personal enjoyment, to the dedicated ornithologist. Mr. Homes observes that “Bird-watching embraces many levels of interest and skill, and it is from the encouragement of the more advanced exponents that the rest can derive most benefit”. Although this is specifically about bird watchers it applies, *mutatis mutandis*, to our other disciplines. One young amateur who joined the Society in 1928 and during his five years with us read his first paper “Some diurnal observations of the Nightjar”, is now known the world over as Dr. David Lack, F.R.S. Our earlier members included several amateur entomologists who became the international authorities on their groups.

L. B. Prout’s presidential address to this Society in 1909 was printed in full in *Nature*, while Arthur William Bacot—completely unqualified in the academic sense—was approaching 50 when he gave up his City career to join the Lister Institute of Preventive Medicine. He did revolutionary work on the inter-relation of lice with Trench Fever and Typhus, and kindred subjects. Unhappily, he died in 1922 following an infection from lice in Egypt. He was an ardent collector and possessed great technical dexterity and a power of excellent description. Until the last

war, we held an annual lecture in his honour. In contrast was his great friend, Professor Greenwood, F.R.S., who became our Hon. President in 1947. A very keen member of this Society, he was a medical student when he joined in 1899. As happens with so many of us, the close friendship grew from their membership of the Society, and they often went walking together in Epping Forest. Unlike his friend, Professor Greenwood had little power of observation out-of-doors—natural history delighted him but it remained for him purely a relaxation, a delight in the wider horizons beyond the four walls of his study. Our present eminent Hon. President, Professor Munro Fox, F.R.S. was already a distinguished man of science when he joined us, yet he used frequently to attend our field meetings. Only recently he led one at Brighton. Obviously with him, as for so many of us, one of the pleasures offered by our Society is association of kindred spirits.

Our early forefathers of Haggerston met in a public house, smoked their clay pipes and, when they could afford them, bought books. They also had anniversary dinners—the twenty-first anniversary was celebrated at High Beach in 1879, when they still met weekly and enjoyed a membership of 79. In the same year they got into debt, as witnessed by the Hon. Secretary's half-yearly report, wherein he wrote, in fine copperplate, "The disbursements have been unusually large and the receipts have been unusually small; the inevitable result has therefore followed as a matter of course, namely, that the expenditure has exceeded the receipts by a sum of £3 6s. 10½d., an unfortunate, not to say an alarming state of affairs".

The subscription was still one penny a week. In 1881—the year in which they were presented with a Red Banner—an attempt to raise it to 10s. 6d. per year failed. So did an amendment to make it 8s. 0d. instead 4s. 4d. per year. As a result, the President and the Hon. Secretary resigned their offices, and membership of the Society. It was over half a century later before the subscription was increased above 7s. 6d. In 1884, the first year in which the British Museum asked them to supply certain specimens for its collections, they had 400 to 500 books in the library. Over the years it would appear that the meeting place always housed the library and collections: what exactly happened to them at these various places I have not yet discovered.

In the early 1920s the indoor meetings appear to have been comparatively few—about one a fortnight. However, Council was a lively affair, and the late Mr. Tremayne, when he was chairman of a committee of Council would as the first committee meeting take all its members to his West-End club for dinner. Incidentally, Mr. Tremayne was an individualist, and founded the Ramblers' Committee in 1923, with, to quote his words, "the idea of forming a section whose members should have no obligation to do any scientific work or anything else but enjoy themselves, and (strangely enough) to provide an excellent training ground for young naturalists". Originally, each member was entitled to nominate an item in turn and lead the outing—usually a country ramble—but it could be a bridge party, and Mr. Tremayne once decided on gin and bitters in an inn before lunch! The "section" began with only 5 members, but soon grew and was formed into a *bona fide* Section, becoming too large for each member to arrange the meeting of his choice—but nonetheless the Ramblers Section today retains a width of tastes in its programme—and attracts large attendances. I would mention here that the

Ornithological Section has been paying particular attention to the social side of its activities, with annual dinners, informal meetings in pubs, and an increasing number of buffet suppers held in conjunction with discussions and meetings with other Societies, as well as weekend excursions—including one for juniors.

To return to the Library and Collections. We do, in Mr. L. G. Payne's "Story of our Society" have a picture of them during the war years of 1939–45 in the corridor of the London School of Hygiene. I cannot recollect that anyone has attempted a similar word-picture of the basement of 25 Eccleston Square—the then home of the R.S.P.B. Committee meetings and informals in the front room, where the library was housed in its motley accumulation of glass-fronted cabinets were then the order of the day, with tea brewed up in the cold stone scullery, the Collections in the dark middle room and the bleak back room being used only, I believe, for the auction at the Christmas Party in 1960, just after we had re-decorated the premises, and just before we had, so sadly, to move out. In those days we were happy there, yet many members still regretted the time when all indoor activities of the Society took place in one building at the London School of Hygiene, and it was easy to use the Library when attending formal meetings. However, when we lost Eccleston Square with its nominal rent, we awoke to the cold reality of the value, in hard cash, of properties in Central London. Even before the exodus, approaches had been made to the L.C.C. for permanent quarters. Nothing came of it—nor of many subsequent attempts with bodies great and small, public and private. At the moment, there seems little prospect of a local society such as ourselves—that is, distinct from a National Body—of getting assistance in the way of headquarters in Central London. All the same, we do have a small Premises Fund held in reserve in the hope that one day, something will turn up. If anyone hears of a possible place, we should be very glad to learn of it. What we discovered is that many other scientific bodies are in the same sort of plight and that, over all, library facilities in London have sadly decreased in recent years, because it has become so expensive to rent suitable premises.

I am not going to repeat the odyssey of our library and its present welcome sojourn at Ealing Public Library. You have already heard tonight a report on the state of its catalogue. When Haggerston Entomological Society was formed, the working man could not easily afford to buy his own books and public libraries scarcely existed; now it is possible to borrow from these an extremely wide range of books—but *not* journals. For general "popular" books up to, say, New Naturalist standard, members can obtain what they need easily and cheaply from their local public library. Comparatively inexpensive field identification volumes are available in profusion for the more popular disciplines, and members can be expected to own some of these themselves. But it is vital for the enthusiastic amateur to have access to a range of specialist works. Until Ealing Library is rehoused (I shall not say rebuilt, as the present building is by Sir John Soane, and scheduled), I fear that browsing among our books on their shelves is an unattainable dream. However, given the existing conditions, our aim is to make the library as useful as possible to members, especially as a research tool, providing research facilities not readily available to the amateur elsewhere in London. We now have a valuable collection of journals waiting to be consulted, and when our catalogue is finally issued I sincerely hope that there will be no lack of

users. Exactly how far we can extend the range of books and journals depends on what we can afford, and we are still looking deeply into this problem.

Here let me say how fortunate we have been in the whole-hearted assistance and co-operation of Dr. Toufar, who as Reference Librarian is not only responsible for our being at Ealing, but has helped us in so many different ways, and ensured that, at minimum cost to ourselves, virtually all our journals are bound up-to-date. Unhappily, our collections have had to be dispersed, but there are available the bird skins kept by Bryan Sage and a new collection, being made by John Cooper, of mammal and bird skulls, and shells.

Now may I turn to the work of the Sections. It is hardly necessary for me to remind you that all members are entitled to attend the meetings of every Section and group, nor to mention that each Section's programme is designed to aid the beginner—especially in field meetings and “informals”—whilst extending and deepening the scope of members of all levels of attainment, by talks from specialists covering the whole range of the subject. Nor must we overlook the discussions before and after meetings between member and member: a few words are sometimes worth several reference books in clearing up a point.

We cater in our General Meetings for what I would call the General Naturalist, and this covers, or should cover, all of us, from the member who from lack of inclination or energy or time does not follow a particular subject and is

“Contented if he might enjoy

The things which others understand”

—from such a person, right up to the most single-minded advanced specialist, who should from time to time pause to look around him to check his bearings and keep his balance. We all help in the climate of opinion that is necessary if Britain in 1970 is not simply to be a man-made horror.

I did say that we are members to name and recognise the facts, and to understand these facts. I have touched, in general terms, on how our programme and our association with kindred spirits sets us in the way of doing this. But what facts? I would attempt a definition as follows:

“The artifacts of past generations of man, the formation of the earth and its fossils and the higher forms of wild and quasi-wild life”.

This means that we do not study bacteria and other small forms of life—although it is a pity that, while we have a marine biologist, we have, seemingly, no workers on the ecology of ponds and other freshwater habitats.

The study of the artifacts of the past generations of man is the province of the archaeologists. We are not unique in combining archaeology with natural history: to many who go about observing with an enquiring mind, it is a short step from the out-of-doors investigation of natural history to the unwritten history of our forefathers. Our Society's official recognition of archaeology is as old as our recognition of ornithology—both had “research committees” formed at much the same time, in 1907-8. The archaeologists of those days appear to have been botanists who included the investigation of churches in their herborising outings. Tonight I have made no attempt pedantically to say “and archaeologists” every possible time, but this by no means implies neglect of them on my

part. The Section inaugurates "digs" and joins in others, besides doing museum work. Their Secretary is fond of saying that, in contrast to the naturalists' conservation, archaeologists tend to destroy their evidence in digging, but they do not destroy without trace or record, as do the bulldozers and the giant excavating grab.

The work of the geologist I will turn to later. At this point I will just say I am sorry that there has been a temporary lapse in their long Easter excursions, and I trust that they will be resumed in 1967.

The other facts—the records of the actual species of the higher forms of wild and quasi-wild life—are the concern of the botanists, the entomologists, the ornithologists, and the ecologists in their study of the non-avian vertebrates. All these groups must be recorded—and, as far as possible, details of these records published in our journals. As a local natural history society, I feel that this is of primary importance and a first charge on our funds: a duty to ourselves and those who come after. Maps are an economical way of publishing species distribution and the results are easy to follow—worth many pages of text. We now have the map of our area specially printed for us: at first sight it is unlike an ordinary map and to plot distribution on its squares, the gridded one-inch ordnance map is also required.

Having listed all the higher species in "The Handlist of the Plants of the London Area" and being responsible for our area in the Atlas of British Flora, the botanists have embarked on a programme of mapping the plants of our area in greater detail, and for this they are applying to the Carnegie Trust for a research grant. The non-avian vertebrates are also to be mapped: Dr. Beven's work on the Grey Squirrel has blazed the trail. As an ornithologist, I should dearly like to see something similar attempted with birds, say the breeding species of Inner London over a 3 or 5 year period, and perhaps the inner limit of the nesting of Swifts, Swallows and House Martins; although Stanley Cramp's paper in the *London Bird Report* No. 22 shows how difficult this can be. For the whole of our area the fluctuations of, for example, nesting Tree Sparrows might be attempted, following Bryan Sage's researches; Richard Fitter showed what can be done, with his map of Starling roosts in the 1941 *London Naturalist*.

Entomology poses its own special problems. There are a frightening number of families with many thousands of species, many of which appear for only brief periods, often in different localities from year to year, and many winged ones disperse at heights where systematic collection is impossible. O. W. Richards, in his paper "Ecological Aims and Methods for Zoologists" *London Naturalist* No. 28, points out some of the difficulties facing the entomologists who tackle ecology. All the same, I would like the entomologists to consider whether anything could be achieved with a few species selected for their ease of identification, or, conversely, the intensive study of two contrasting areas such as Bookham Common on the outskirts and St. James's Park in Inner London. This might have some bearing on the differences between the bird life of these areas. Incidentally, maps were used by Dennis Owen in his very comprehensive 1952 paper on "The Ecology and Distribution of Satyridae in West Kent". His results would have looked even better on our new maps.

The ecological studies at Bookham Common have an international reputation. Over the last twenty-five years a small band of members, with Cyril Castell as the undeclared Director of Studies—he wrote the

first paper—has amassed an invaluable corpus of records including many maps, and now we have a hut there as a research centre. Perhaps for formal occasions we might call it the “Cyril Castell Research Centre” Next summer we are having a Nature Trail over the Common and I hope that some of the visitors may be encouraged to return as regular workers.

In the last *London Naturalist* Mr. Castell has shown to all geologists how much interesting and essential work there is for them to enjoy at Bookham and elsewhere. The printed geological maps might give the non-geologist the impression that our area is adequately surveyed, but in many respects the general outlines only have been filled in, and there is plenty for the amateur to do in working on selected areas that are being studied intensively by our botanists and ecologists. I hope that they will follow up Mr. Castell’s work. If they need special research apparatus they might join with the ecologists in applying for it through a Carnegie Trust grant.

Ecological surveys are not necessarily corporate projects. Much can be achieved by people working in ones and twos, for example the following papers in the *London Bird Report*: Miss Evelyn Brown on Holland Park, and Stanley Cramp and “Bunny” Teagle on “A Comparative Study of the Birds of Two Stretches of the Thames in Inner London 1951/3”.

My immediate predecessor, Britain’s leading amateur botanist, Ted Lousley, pleaded for more co-operation between the Sections. We used to have the office of Director of Studies: this is no longer practicable. Perhaps some system could be inaugurated—possibly through Council—or even at Council meetings—whereby sectional representatives meet together to discuss future research. I feel that positive planning is the means whereby the sections can work together on collateral projects. This is, perhaps, only a pipe-dream, but perhaps an attempt could be also made to work in conjunction with the University of London, say in an effort to extend the studies of P. J. S. Olney on the food of ducks (*Ibis* 1963 Vol. 105, 55)—the only paper to which I refer which has not been published in our journals. At Colnbrook, the largest item of food of the Tufted Duck was a fresh-water Zebra-mussel, *Dreissena polymorpha* (Pallas). From F. T. K. Pentelow’s paper in the last *London Naturalist* it would appear that there are no mussels in St. James’s Park lake; perhaps bread is here the attraction, but whatever it is we have plenty to learn as to what attracts various birds to our many stretches of water, as is freely admitted in our book *The Birds of the London Area*. Len Manns has made his own liaison with University staff by organising an ecological study weekend for the Society at Juniper Hall in February next.

Our publications speak for themselves. Like everything else, they are far more costly now than they used to be: forty years ago they were not a charge on the subscriptions, but with the aid of donations were self-supporting. Today this is impossible and, if for no other reason, we need as large a membership as we can get to pay for their printing. Everyone should always be trying to introduce new members; we shall, of course, be delighted to see new faces, and we shall also be pleased to see their subscriptions to enable us to meet our obligations to science.

Work has started on indexing our journals from 1951, the date up to which Richard Fitter indexed the earlier volumes. Members often publish papers in specialist periodicals, and we are again attempting to start a system of extracts from other scientific journals of papers relevant to our

area and our studies. By these means, members would have ready reference to past studies in the area on their subjects.

Collecting and understanding facts are ends in themselves—a mental delight. The search for pure knowledge—truth for its own sake—is really our aim. However, “no man is an island entire of itself”. We cannot ignore the passage of events around us. And here comes our use of the facts. Annual exhibitions were popular until the last war. In 1881, about one thousand visitors saw two hundred cases of insects, many of which would have been collected in Epping Forest, but perhaps no scientific facts were required two years later to persuade two thousand people to sign a petition against the building of a railway line through the forest to High Beach—M.P.s were interviewed and the Bill thrown out of Parliament. Our Secretary wrote “Credit was claimed by the Essex Field Club who did not really meet until this Society had been agitating for some time”. Right through our history, although not greatly publicised, we have been active in preservation. During the last war we had a Nature Reserves Committee to recommend on our area—it sat twenty-five times. A leading member was Mr. Castell, and in the years between he has often been our sole negotiator with local councils on conservation matters. Now we have a large Conservation Committee, organised to work in full co-operation with the County Naturalists’ Trusts. These Trusts are of recent growth and, with the Council for Nature and the Nature Conservancy, would seem to make it unnecessary for us to devote all our energy to conservation. But, nonetheless, we have three important roles to play. The first is that of watch-dog, for the more people there are actively looking out for threats to our wild life, the more effective will be the case of the conservationists. Secondly, we can frequently provide the hard facts as to what is, nature-wise, special about an area, and also offer advice on the methods of active management of a conserved site. Thirdly, we have a different centre of gravity, in that we are, as members of this Society, Londoners first and foremost, and are much more concerned about threats to an area within or on the fringe of the built-up Wen than, say, a part of the North Downs.

The Lea Valley development scheme is a case in point. Had it not been for our Society, naturalists would still be without a hearing in this Scheme. Not only did we get the Report prepared, but we have had to push hard—and keep on pushing—to get it noticed by the inner councils of the Greater London Authority.

Great plans are afoot for the countryside in 1970: we have a special task for today to halt erosion and spoliation of the open spaces of our area. It is not enough to watch and pray: if you note anything and cannot take action yourself, immediately report it to the Secretary or the relevant member of our Conservation Committee. Here I must utter a warning. We are not an amenity society; what we seek to protect are areas of importance to naturalists. We cannot validly protest if your local council decide to cut down the chestnut trees in your road, nor even if they propose to build a new road across your common, unless such a road would destroy or badly interfere with an important habitat. If you wish to protest simply that your common is being spoilt, the Commons and Open Spaces Preservation Society will take up the cudgels on your behalf.

I have omitted the consideration of many aspects of our Society today, such as our local groups and reading circles. Although our own film is being shown during National Nature Week next April, films have not

been mentioned because we have no immediate prospect of making a new one—are there any offers?

I should like, in conclusion, to offer to you my best wishes for your nature studies in 1966, and to all developers this plea:—

What would the world be, once bereft
Of wet and of wildness? Let them be left,
O let them be left, wildness and wet;
Long live the weeds and the wilderness yet.

(Gerard Manley Hopkins)

Botanical Records for 1965

Compiled by J. EDWARD LOUSLEY

THE new scheme for mapping the flora of the London Area according to the National Grid commenced on January 1, 1965, and is now the basis of the botanical records of the Society, and the subject of a separate report (see p. 25). The present series of annual accounts of plants of special interest will be continued, and it is expected that in addition to individual records contributed by members, unexpected discoveries will be made as the detailed investigation of “tetrads” proceeds.

Our experience during 1965 confirms that there are still many important plants to be found or rediscovered in the London Area. Rare native plants found in new localities during the year include a grass, *Nardurus maritimus*, and a club-moss, *Lycopodium clavatum*, discovered by Mrs. A. G. Side in Kent, a bladderwort, *Utricularia vulgaris*, in Hertfordshire, and an orchid, *Epipactis phyllanthes* var. *degenera*, in Middlesex, both reported by B. P. Pickess. As the following account will show, some plants have been found still growing in very old localities; a few species have been added as new to the London Area. It is hoped that members who have contributed records in the past, but who are unable to mark up cards for the maps scheme, will continue to send in reports. It is, however, essential that these should include grid references if the records are to be incorporated in the new scheme, and long lists of records are best sent in on mapping cards.

Because so many members failed to provide full National Grid or tetrad references it has only been possible to cite 10-kilometer squares in this report: these are given in brackets following the place names (for a full explanation see *Lond. Nat.*, 37, 182, 1958). The nomenclature is based on the *List of British Vascular Plants* (1958) prepared by J. E. Dandy, and for species in that *List* authors' names are omitted in order to save space.

V.-c. 16, WEST KENT

Three records of exceptional interest were contributed by Mrs. A. G. Side. In May she found blue-eyed grass, *Sisyrinchium bermudiana* near

the river at Swanscombe (67); in June, *Nardurus maritimus* in abundance in Horn's Cross pit (57); in July, on a Kent Field Club walk at Joyden's Wood a club-moss, *Lycopodium clavatum*. For the latter our only previous records are from Banstead Heath in Surrey, where it persists, and a gravel pit in Hertfordshire where it was found in 1964. The grass *Nardurus* was known in Kent on chalk from several places outside our Area but this is the first time it has been found in the county so near London.

In 1964 R. M. Burton found a pearlwort, *Sagina procumbens*, with many petals so that the flowers formed tiny white buttons. This was on a sunny bank in a wood north of Well Hill (46) and this appeared again in 1965. He reports *Barbarea stricta* from West Kingsdown (56), an extraordinary habitat for this species otherwise restricted to water-meadows, but his specimen was determined by the British Museum (Natural History). He found the lower pond at Chislehurst (47) choked with *Ceratophyllum demersum*. *Bupleurum tenuissimum* is a rare species of saltmarshes and sea-walls of which B. A. Miles has shown me specimens he collected as a weed in flower beds by Severndroog Castle, Shooter's Hill (47) in 1962, where *Smyrniium perfoliatum* also grew.

H. M. Pratt contributed his usual useful list of new records and confirmations of old ones. By the Stone to Dartford road at The Brent (57) he found *Lathyrus aphaca*, and a monkshood, *Aconitum anglicum*, both no doubt introduced. J. R. Palmer supplied a long list of aliens which included *Dipsacus sativus* (L.) Scholler, *Lavatera trimestris* L., and *Scorpiurus muricatus* subsp. *subvillosus* (L.) Thell. (det. J. E. Lousley) from a refuse tip at Horn's Cross; *Trachystemon orientale* of which "hundreds of plants" were naturalised by the lakes in Holwood Park (46); and barn-yard grass, *Echinochloa crus-galli* in fair quantity as a weed in a crop of maize at Hawley (57).

V.-c. 17, SURREY

R. Clarke has again contributed a most interesting list of records which include some unexpected discoveries in the built-up part of the vice-county. Perhaps the best of these is English scurvy-grass, *Cochlearia anglica* on the embankment of Battersea Park (27). This is still found in some plenty on the saltmarshes lower down the Thames, and there are old records from as far up the river as Putney, but this is the first time we have received a record for Surrey. On Wandsworth Common (27) he found *Juncus tenuis*, and on Tooting Bec Common (27), *Polygonum amphibium*, *Alopecurus geniculatus*, *Myriophyllum spicatum*, and *Chamaemelum nobile*, while Streatham Cemetery (26) produced a good list including *Geranium pusillum*. His survey of the Surrey Naturalists' Trust Nature Reserve at Godstone Town Pond (35) recorded, *inter alia*, *Scirpus tabernaemontani* and *Zannichellia palustris*. On a bank at Shirley Common (36) he found *Cerastium semidecandrum* growing near *Trifolium ornithopodioides*, and near Crab Wood, Farleigh (36) *Galium tricornutum* a weed of arable land formerly fairly frequent which, apart from a record from a refuse tip, had not been recorded in the London Area for twenty-six years. Mr. Clarke also communicated a record for *Corydalis claviculata* from a felled wood above Marden Park (35) where it was first found by T. G. Ferguson in 1964. This is of special interest as two large patches grew on clay-with-flints, which is a very rare habitat.

Mrs. J. E. Smith's list included some welcome observations from

Leatherhead Golf Course (15)—*Descurainia sophia* and *Carex* × *pseudo-axillaris*.

The alien waterweed *Elodea ernstae* (*E. callitrichoides*), which was introduced by aquarists, is now in several ponds in Richmond Park in addition to the Bishops' Pond where it was found in 1961. Amongst the records received are those from a small pond near the Kingston Gate (17) from E. J. Clement, and a small unmarked pond at G/R.206724 (27) from B. Wurzell. Near Thorpe (06) Mr. Clement found *Trifolium striatum* and *Crepis biennis*, in Addlestone Moor Cemetery (06) *Bromus thominii* (for which we have far too few records as yet) and *Medicago arabica*. In the Brimmer Pond, Headley Heath (25) he found *Ranunculus lingua* (doubtless introduced) and *Myriophyllum alterniflorum*; near Chessington Parish Church (16) *Barbarea intermedia* as a garden weed in an area for which there are old records when it was cornfields; and by Leatherhead Church (15) *Viscum album* growing on *Robinia pseudacacia*.

V.-c. 18, SOUTH ESSEX

We are most grateful to S. T. Jermyn for sending us long lists which help to fill many of our gaps in the records for this vice-county and also V.-c. 19. Of special interest are *Trifolium squamosum* and *Parapholis strigosa* from Aveley Marshes (57) for each of which we have several records from Kent, but these are the first from the north side of the Thames. From Purfleet (57) Mr. Jermyn reports walnut, *Juglans regia*—several trees south of the railway level crossing and seedlings on the War Department road to the ranges. As there are specimens from Purfleet collected by the Rev. P. H. Cooke in 1936 in our herbarium, it seems that the tree is well established and spreading.

One evening I accompanied Mr. J. T. Smith on a visit to the waste ground near Bow Creek (38) referred to in last year's report. The species added to the list included *Sisymbrium loeselii*, *Hirschfeldia incana*, and *Ficus carica*, and Mr. Smith sent me a specimen of *Reseda phyteuma* he collected there in 1963. Tuberous pea, *Lathyrus tuberosus*, was found by Dr. A. Adams by old quarries at Stifford (57) in 1964.

V.-c. 19, NORTH ESSEX

The additions contributed by Mr. Jermyn include *Orchis morio* from Nazeing Mead (30) found by B. Meadows.

V.-c. 20, HERTS.

In a pond on Batchworth Heath (09), B. P. Pickess found the bladderwort, *Utricularia vulgaris*, which is now very rarely seen in the London Area. The identification was confirmed by Dr. J. G. Dony. A number of interesting aliens have also been reported, including a grass, *Monerma cylindrica* (Willd.) Coss. and Dur., found by B. Wurzell on a refuse tip near Broxbourne (30), and an umbellifer, *Trachyspermum ammi* (L.) Sprague ex Turrill, collected by I. G. Johnson from a refuse tip at Maple Cross. These were probably introduced with cage bird seed from Mediterranean countries.

V.-c. 21, MIDDLESEX

Although Middlesex contains less unspoilt country than any of the other large parts of vice-counties in our Area, it continues to produce a

surprisingly large proportion of the most interesting records. This year pride of place must be given to an orchid found by B. Pickess in the vicinity of Harefield (09). This was *Epipactis phyllanthes* var. *degenera*, as determined by Dr. D. P. Young, and there were 60–70 plants seen by several of our members. Mr. Pickess also reported well over 2,000 non-flowering plants of *Tulipa sylvestris* known to him for ten years in Bayhurst Wood Nature Reserve (08).

Several nice things turned up in the centre of London. Miss R. Rönaasen found *Apium nodiflorum* in turf behind the Tate Gallery (28), and D. McClintock reported *Centaurea solstitialis*, and *Chenopodium vulvaria* from Maunsell Street (27). R. M. Burton found male fern, *Dryopteris filix-mas*, almost in the Strand (38) and a sedge, *Carex divulsa*, on the north bank of the Thames just east of Chelsea Bridge (27). But perhaps the strangest find of all was a South African grass, *Brachiaria marlothii* (Hack.) Steud. of which D. E. Turner gave me a specimen found in a pot of cacti in his office at Paddington (28). A little further out, D. H. Kent noticed a good colony of *Impatiens capensis* on rotting hulks just upstream from Hammersmith Bridge (27), *Potentilla recta* well established on a railway bank of the Piccadilly Line near Acton Town Station (17), and a large sporeling of maidenhair fern, *Adiantum capillus-veneris*, on a concrete wall at South Ealing Station of the Piccadilly Line.

D. H. Kent has done much invaluable work during the year in marking up Middlesex cards for our mapping scheme, and checking distribution for his Flora, and many useful records have resulted. These include *Fumaria densiflora* from Laleham (06) and two places at South Ealing (17); *Soleirolia soleirolii* (Req.) Dandy from near Twickenham Church and St. Margarets (17); *Avena ludoviciana* as frequent in gravel pits and stubble fields near Colnbrook (07) in Bucks. as well as Middlesex; *Muscari atlanticum* in a large well established colony on a railway bank between W. Ealing and Ealing (18); *Senecio* × *ostenfeldii* with both parents on Staines Moor (07); *Symphytum orientale* on a railway bank at Isleworth (17), where it was first noted by R. A. Pryor as long ago as 1876 (*J. Bot.*, 14, 214), and in a similar habitat at Cricklewood (28); five old bushes of medlar, *Mespilus germanica*, in a field border between Osterley Park and Heston (17); and *Salvia verticillata* at Willesden Junction (28). With Dr. J. G. and Mrs. Dony he recorded *Glyceria declinata* from Wrotham Park near Potters Bar (29), and the fine umbellifer *Sium latifolium* from a lake in woodland west of Potters Bar (20), and with B. Wurzell, a grass, *Puccinellia distans* as abundant by the canal at West Drayton (08). With Miss M. E. Kennedy he saw the introduced water-weed *Lagarosiphon major* locally abundant in a gravel pit at West Bedfont (07); water soldier, *Stratiotes aloides* abundant in a lake at Wild Wood, Whitewebbs Park; solomon's seal, *Polygonatum multiflorum* in scrub at Botany Bay, Enfield Chase (29); many plants of *Nemesia strumosa* Benth. growing for about 100 yards on a woody roadside verge at Botany Bay, Enfield (29 and 39); a large plant of *Malva pusilla* by a drive leading to a farm not far away (29); and a crucifer, *Carrichteria annua* (L.) DC. on the roadside at Plumridge Hill (29).

John Mason, E. J. Clement, and B. Wurzell have all sent most useful lists of plants they found, sometimes in company, in this and other vice-counties. At a gravel pit at East Bedfont (07) John Mason reported that the Australian *Juncus pallidus*, first recorded in 1945 was still on the islands, but the last plant on the edge was destroyed during 1965. The

extension of the refuse tip which destroyed it has *Bromus carinatus*, of which we are recording the spread with great interest. On Hounslow Heath tip (17) he found *Ononis natrix* L., which he sent me for identification. E. J. Clement found about ten plants of *Crepis setosa* by a footpath near Boston Manor (17); *Cerastium semidecandrum* on Staines Moor (07); and *Artemisia biennis*, named by D. McClintock by the lake in Gunnersbury Park (17). Amongst the many plants noticed by B. Wurzell were deadly nightshade, *Atropa bella-donna* and *Montia perfoliata* in Regent's Park (28); *Atriplex rosea* L. on Hounslow Heath tip (17) and *Epilobium roseum* as a local weed in gardens and on waste ground at South Tottenham (38). From D. J. Hinson come records of *Epilobium lamyi* (det. T. D. Pennington) from near Mill Hill (29), and *Geranium lucidum* from waste ground between Mill Hill and Totteridge (29). I. G. Johnson records *Geranium columbinum* from Denham (08, in Middlesex), and *Lunaria annua* from Harefield Moor (08) and West Hyde (09). D. H. Kent also found a good colony of this species on waste ground at The Ham, Brentford (17).

V.-c. 24, BUCKS.

During 1965 several members sent in useful lists of additions for this small part of our Area. Amongst those contributed by I. G. Johnson were a new locality, Denham Place (08) for *Orchis praetermissa* (which must have had a good year as B. P. Pickess found it in two places in Middlesex, in one of them over 500 plants). Mr. Johnson also found *Lathyrus latifolius* and *Juglans regia* at Denham Studios (08), and *Heracleum mantegazzianum* at Iver (08). D. H. Kent reports two hybrids *Senecio* × *londinensis* and *S.* × *ostenfeldii* from near Colnbrook (07), and, with T. G. Collett, *Symphytum* × *uplandicum* from Denham Churchyard (08), *Melissa officinalis* from near Iver Heath (08), where they also found *Polygonum aubertii* and *Cerastium tomentosum*. B. P. Pickess records *Lemna gibba* from the River Misbourne in Denham Village (08), while R. S. R. Fitter sent a useful list from gravel workings at Denham.

We are grateful to the following for the contribution of detailed records during 1965, those who sent lists being marked with an asterisk:—

Mrs. C. Arcus, Dr. B. J. Bedell, Miss L. F. Bowden, Lady Anne Brewis, Mrs. E. A. Briggs, R. M. Burton, *R. Clarke, *E. J. Clement, T. G. Collett, Mrs. C. M. Dony, Dr. J. G. Dony, Miss H. M. Downton, J. B. Evans, T. G. Ferguson, *R. S. R. Fitter, S. W. Hewartson, Donald J. Hinson, *S. T. Jermyn, *Ian G. Johnson, Miss M. E. Kennedy, *D. H. Kent, J. E. Lousley, D. McClintock, *John Mason, B. A. Miles, Mrs. D. Missen, Miss E. Moyes, A. F. Musselwhite, *J. R. Palmer, T. D. Pennington, *B. P. Pickess, *H. M. Pratt, Miss R. F. Rönaasen, Mrs. A. G. Side, *Mrs. J. E. Smith, J. T. Smith, D. E. Turner, *B. Wurzell.

Some of these records arose out of the Maps Scheme, which is the subject of a separate report.

A Survey of *Calystegia* in the London Area

Fourth Progress Report 1965

PREVIOUS reports of our Survey on the bindweeds, *Calystegia sepium* (L.) R.Br. and *C. silvatica* (Kit.) Griseb. and the intermediate form, have indicated satisfactory progress and continued interest. Work done during 1965 has proved no exception to this traditional rule. Over 200 more cards were submitted and, although some earlier volunteers have had to drop out, new recruits have come in to keep the team's active numbers between 40 and 50. The total of 860 cards, however, is not considered quite enough to give adequate coverage and the Botany Section Committee has decided to carry on for one more season, most probably the last, during which we may expect to attain a grand total of well over 1,000 record cards.

Several members, to whom our thanks are especially due, made particular efforts to fill in gaps in our underworked areas, the Committee's Secretary, Miss Margaret Kennedy, being exceptionally active in the north of our area. Mr. R. M. Burton kindly gave me a note of 1 km. squares in an area in Kent in which few or no bindweeds were to be found, useful information of a sort that one or two other members have also given me, although not in such detail. As cards have come from all over the area this season I see no point in listing localities but I trust that my map of the distribution of squares worked in, now plotted on one of the Society's grid-recording maps, will encourage workers to go on finding the gaps. This map will be shown at meetings though it is not practicable to publish it with this report.

All cards received have been worked out according to the method outlined by C. A. Stace (*Watsonia*, 5, 88-105, 1961) to give an index number indicating whether the plant recorded is *C. sepium*, *C. silvatica* or an intermediate; it may be convenient to refer to the last as a hybrid as at least one form of the intermediate has been given the name *X lucana*. I am much indebted to Mr. G. Eastwood for supplying me with tables to speed up the mathematical part of this task. During 1965 almost equal numbers of each taxon were recorded, *C. sepium* having a slight edge on the other two. The total 860 cards reveal the following proportions: *C. sepium*, 300; hybrid, 330; *C. silvatica*, 230. The hybrid has thus been recorded most frequently but not excessively more than *C. sepium*, which has, however, been recorded significantly more often than *C. silvatica*. In my opinion this ratio will not vary to any great extent in the final analysis. I have abandoned the large map on which I attempted to plot the distribution of all three taxa as it became too complex and have re-plotted the distribution of each taxon on three of the Society's new maps. They will be shown at meetings whenever possible.

In order to make this report more interesting and not to waste the efforts of all those many workers who have supplied habitat notes, I have endeavoured to work out very broadly the habitat preferences of the three taxa. I feel, again, that the pattern will not change remarkably with the addition of next year's results. Five main types of habitat are distinguishable in my view:

- A. Hedges and verges of roadsides and lanesides, often with a ditch, usually in rural and suburban areas, bordering fields, farms, etc. "Hawthorn" the commonest hedge.

- B. Cultivated or particularly man-made habitats such as gardens, allotments and the fences (often wire), hedges (often privet) and walls around them. Car-parks, school grounds, cemeteries and the like included here. Most often occur in built-up areas.
- C. Uncultivated and rough ground, waste ground, bombed-sites, gravel-pits, rubbish tips. May be anywhere in the area. "Nettles, thistles, brambles" frequently noted.
- D. Open fields and grassland, often on commons and heaths, edges of woodland. Mostly in rural areas.
- E. Aquatic: sides of rivers, streams, canals, ponds, lakes, and in marshy ground.

The percentage occurrence of each taxon is expressed in the following table:—

	Type A	Type B	Type C	Type D	Type E
<i>sepium</i>	30	30	22	8	10
hybrid	20	32	30	12	6
<i>silvatica</i>	18	36	27	10	9

This table indicates that *C. sepium* has been recorded significantly more frequently than *C. silvatica* in habitat type A; that *C. silvatica* has been found twice as often in type B than in type A; that about one-third of each of the taxa has been recorded in type B. Other conclusions may be drawn from the table but the general impression of London botanists is confirmed, that *C. sepium* is a plant of more "natural" and rural habitats as well as a garden weed, whereas *C. silvatica* (an introduced species), also a garden weed, otherwise prefers rough and waste ground.

When filling in habitat notes on their cards many recorders noted the vegetation associated with *Calystegia*, varying from "bushes", "grasses", "shrubs" to a small list of species. The following list is of all species so far mentioned, except for purely garden shrubs such as "rhododendron", "laurel", but including "privet" as *Ligustrum ovalifolium*. "Hawthorn", when specified on cards, is invariably *Crataegus monogyna*, and is listed as that species by me, as is *Urtica dioica* for "nettles". "Thistles" might be a number of things but as *Cirsium arvense* is the only one specified I have listed only that species. "Brambles" have been interpreted as *Rubus fruticosus*. Many of the species have been mentioned once only but it would be misleading to take this as a sign of rare association. The only indication of frequency that I have ventured to make is to mark those species mentioned between 6 and 12 times with an asterisk and those more than 12 times with "fr".

There are clearly many gaps in this list, for example in the grasses, and observers are asked to make a special note of associated plants during the 1966 season.

Preliminary list of species associated with *Calystegia*, based on records so far received:

Pteridium aquilinum (Bracken)
Clematis vitalba (Old Man's Beard)
Papaver rhoeas (Common Poppy)
*Diploxys tenuifolia** (Wall Rocket)
Cardaria draba (Whitlow Pepper Wort)
A Armoracia rusticana (Horse Radish)
Hypericum perforatum (Common St. John's Wort)
Saponaria officinalis (Soapwort)
Atriplex hastata (Hastate Orache)
Impatiens capensis (Orange Balsam)
Acer pseudoplatanus (Sycamore)
Ilex aquifolium (Holly)

Rubus fruticosus fr. (Bramble)
Rosa arvensis (Trailing Rose)
R. canina (Dog Rose)
Rosa sp. (species of Wild Rose)
Prunus spinosa (Blackthorn, Sloe)
Crataegus monogyna fr. (Hawthorn)
*Epilobium hirsutum** (Great Hairy Willowherb)
Epilobium sp. (species of Willowherb)
Chamaenerion angustifolium (Rosebay Willowherb)
Hedera helix (Ivy)
Anthriscus sylvestris (Cow Parsley, Hedge Parsley)
Aegopodium podagraria (Goutweed, Ground Elder)
Foeniculum vulgare (Fennel)
Angelica sylvestris (Wild Angelica)
Heracleum sphondylium (Hogweed)
Bryonia dioica (White Bryony)
Polygonum aviculare (Knotgrass)
P. cuspidatum (Japanese Knotweed)
Urtica dioica fr. (Nettle)
Humulus lupulus (Hop)
Ulmus sp. (Elm)
Betula pendula (Silver Birch)
Populus italica (Lombardy Poplar)
Salix sp. (Willows)
Lysimachia nummularia (Creeping Jenny)
Ligustrum ovalifolium fr. (Garden Privet)
Symphytum officinale (Common Comfrey)
*Convolvulus arvensis** (Small Bindweed)
Solanum dulcamara (Bittersweet, Woody Nightshade)
Mentha aquatica (Water Mint)
Lycopus europaeus (Gipsywort)
Plantago lanceolata (Ribwort Plantain)
*Sambucus nigra** (Elderberry)
Lonicera periclymenum (Honeysuckle)
Dipsacus fullonum (Teasel)
*Senecio squalidus** (Oxford Ragwort)
Solidago sp. (species of garden Golden-rod)
Conyza canadensis (Canadian Fleabane)
Achillea millefolium (Yarrow)
Artemisia vulgaris fr. (Mugwort)
Arctium sp. (species of Burdock)
*Cirsium arvense** (Creeping Thistle)
Lactuca serriola (Prickly Lettuce)
Hieracium sp. (species of Hawkweed)
Typha sp. (species of Reedmace)
Carex hirta (Hairy Sedge)
Phragmites communis (Reed)
Glyceria maxima (Reed Sweet-grass)
Cynosurus cristatus (Crested Dog's-tail)
Briza media (Quaking grass)
Holcus lanatus (Yorkshire Fog)

The nomenclature of the above list, except for *Populus italica* (Duroi) Moench, is that of Dandy, 1958, *List of British Vascular Plants*. I have added common names for the benefit of my non-botanical helpers and have sought the assistance of Kent and Lousley, 1951-7, *A Hand List of the Plants of the London Area*, in many instances for this purpose. I am confident that I can rely on a tremendous effort during the last season of the Survey; please contact me c/o Dept. of Botany, British Museum (Nat. Hist.), Cromwell Road, S.W.7.

E. B. BANGERTER.

Botany Section Plant Mapping Scheme

Progress Report for 1965

THE scheme for recording and plotting the distribution of the flowering plants and ferns of the London Area was truly launched in May 1965, when supplies of an explanatory leaflet and field record cards were produced. Before this, however, two informal meetings had been held and announcements had been made at many meetings of the Society, so that about 100 members were already making records or ready to start. January 1, 1965 was decided upon as the official starting date of the survey, although earlier records may be incorporated in the final result. This, it is hoped, will be in the form of distribution maps as explained on page 11 of last year's *London Naturalist*. By the end of the year, the number of members intimating an interest in the project was approaching 150 and this figure has since been passed.

Towards the end of the year, the Committee appointed a panel of Vice-county Recorders to whom contributors were asked to send their marked cards. About 40 members have submitted just over 250 cards representing tetrads scattered widely throughout the area. Many more will be needed and, of course, still more records must be obtained from most of the squares already visited before any significant distribution patterns will emerge; but a good start can be said to have been made in all counties.

Most of the work in West Kent (V.-c. 16) has been done in the rural parts, practically none having been done in the inner built-up squares. There is also plenty of scope for work in the south-west and in a five-mile belt along the south bank of the Thames. The cards submitted for Surrey (V.-c. 17) are for widely scattered tetrads and represent a tiny fraction of those to be worked. There is scope for much work throughout this county. The squares in South Essex (V.-c. 18) are mostly those from Romford to Brentwood and those shared with Middlesex along the vice-county boundary from Bow to Chingford. Otherwise, like the fragment of North Essex (V.-c. 19) in our area, the county is virtually untouched. Herts. (V.-c. 20) has received least attention of all the counties, only three cards having been submitted. Middlesex (V.-c. 21) enjoys pride of place, well over 100 squares having been visited, though many of these are far from fully recorded. More work is needed in the south-west, the north-west and the north-east of the county. In the small portion of Bucks. (V.-c. 24) in our area, the 13 cards submitted show that a goodly proportion of the squares have been visited.

This brief account gives the merest indication of what has been achieved so far. Much work will be called for over the next three or four years at least, and only with the willing help of all our members interested in furthering knowledge of the flora of the Society's area and, incidentally, adding to the enjoyment and satisfaction they derive from their botanical pursuits, can we look forward to a successful conclusion to the scheme.

P.C.H.

Algae in St. James's Park Lake

By B. A. WHITTON, Ph.D.

IT is a pity that so few naturalists are willing to study the microscopic organisms of ponds and reservoirs, as there is a great lack in this country of detailed studies in this field. The identification of many of the species is admittedly a problem for the specialist, yet there is still much that any biologist with not much more than a fairly good microscope, a few books, and occasional expert guidance, can do by following the changes in one pond over the years. There are many excellent bodies of water in London suitable for such surveys, yet it seems that none of them are being sampled regularly for detailed data on the changes in their plankton. There are plenty of good sites for such work not far from the centre of the city (e.g. The Regent's Park Canal), and in the hopes of stimulating interest in their algal flora a preliminary report on the plankton of the Lake in St. James's Park is given here.

GENERAL OBSERVATIONS

An excellent history of the Lake in St. James's Park is given in the *London Naturalist* No. 44, 1965, by F. T. K. Pentelow, but unfortunately there have been few records in the past of the algae present. Pentelow mentions that in 1954 there was a very heavy growth of the filamentous alga, *Rhizoclonium hieroglyphicum*, which resulted in the death of a large number of ducklings, but that since 1959 none has been noticed. The present author observed dense "blooms" of algae colouring the lake green in the early autumn of 1961, and these have been present every year since. Each time these have been due to one or two species of Blue-green Alga, though the actual species were not the same each year. In 1961 it was *Oscillatoria limnetica*, in 1962 *O. planctonica*, in 1964 a mixture of *O. limnetica* and *Anabaena aequalis*, and in 1965 *Oscillatoria agardhii*. Detailed records of changes in the algal plankton have been made since May 1964 by counting the number of cells of each species present in a unit volume of lake water. The actual water samples were in most cases collected by Mr. B. A. Martin of the Ministry of Agriculture and Fisheries, with fresh and preserved samples being posted to the author.

It is obviously much too early to say whether any of the species have regular annual patterns, but certainly the occurrence of many species differed markedly in 1964 and 1965. The *Anabaena aequalis* mentioned above reached a total of 33,200 filaments/ml. on 1st September 1964, yet was never seen at all in 1965. The *Oscillatoria agardhii* showed the opposite behaviour, being absent in 1964 and reaching a total of 46,500 filaments/ml. on 14th September 1965. The desmid *Closterium acutum* was frequent in August 1964 and October 1965, whilst a similar species, *C. ceratium*, did the exact opposite, being frequent in October 1964 and August 1965.

A number of common species of green algae on the other hand showed a similar behaviour in both years, gradually increasing to large or very large numbers in summer, and then gradually falling off again to small populations in winter (e.g. *Scenedesmus* spp., *Pediastrum boryanum*). And in yet other cases the alga may rise and fall sharply a number of times throughout the year without any obvious pattern. A marked case of this type of behaviour is that of the easily recognizable diatom *Nitzschia*

acicularis. In this sort of case we do not know whether real increases and decreases in the size of population are occurring, or whether for instance the alga may sometimes exist near the bottom of the pond, and at others be dispersed in the plankton.

Very little is in fact known about the factors affecting the size of algal populations in large ponds like the Lake in St. James's Park and what causes the changes that occur from month to month. One interesting problem which would repay careful study is the effect of a small protozoan which apparently destroys algal cells by sucking out their contents. The majority of species of green alga in the Lake belonging to the order Chlorococcales have at one time or another been seen to be attacked by this organism. It is easy to see whether a cell has been attacked, as all that usually remains is the old cell wall with a pinkish granule somewhere inside. This pink body is presumably the remnants of the algal cell contents indigestible to the animal. At times almost all the algal cells of a particular species may be attacked, whilst the other species of Chlorococcales present appear untouched. And then a few weeks later one or more of the other species are attacked, and so on. Anyone with the patience to take frequent samples of a pond rich in Chlorococcales, and make careful cell counts of living and parasitized cells, and of the pattern in which colonial forms are attacked, would help give us an understanding of one of the factors involved in the control of population size in these micro-algae. And this is but one of the numerous problems which could be investigated by comparatively simple methods in ponds and reservoirs around London, but which would nevertheless be of real scientific value.

ACKNOWLEDGEMENTS

The author wishes to thank Mr. F. T. K. Pentelow for his interest in this work and the Ministry of Agriculture and Fisheries for their help in collecting samples. He is also very grateful for advice on the identification of Chlorococcales from Drs. E. M. F. Swale and J. H. Belcher, and on diatoms from Miss M. Dalpra.

APPENDIX—SPECIES LIST

A list of the algal species recorded in the plankton in 1964-1965 is given below. The names given to some of the forms can only be provisional, as their taxonomy is frequently still in a muddled state. This is particularly true of many of the Chlorococcales.

A number of algae were found only on the cemented sides of the Lake, and these are not included in the list. The most interesting of these was *Asterocytis smaragdina*, a member of the Rhodophyta, which was associated with growths of *Cladophora glomerata* in September 1965.

MYXOPHYTA

Anabaena aequalis Borge
A. flos-aquae (Lyngb.) Bréb.
Aphanocapsa elachista W. et G. S. West var.
planctonica G. M. Smith
Beggiatoa (various forms)
Chroococcus minutus (Kütz.) Näg.
Gomphosphaeria aponina Kütz.
Lyngbya sp.
Microcystis aeruginosa Kütz.
Oscillatoria agardhii Gom.
O. limnetica Lemm.
O. tenuis Ag.
Spirulina albida Kolkwitz
S. subtilissima Kütz.

CHLOROPHYTA

1. Volvocales
Chlamydomonas? incerta Pascher
Chlamydomonas spp.
Phacotus lenticularis Ehr.
2. Tetrosporales
Elakatothrix viridis (Snow) Printz
3. Chlorococcales
Actinastrum hantzschii Lagerh.
Ankistrodesmus falcatus (Corda) Ralfs
type and several varieties
A. subcapitatus Korshik.
Coelastrum microporum Näg.
Crucigenia apiculata Schmidle
C. rectangularis (A. Br.) Gay

C. tetrapedia (Kirchn.) W. et G. S. West
Dicellula planktonica Swir.
Dictyosphaerium sp.
Didymogenes palatina Schmidle
Franceia droescheri (Lemm.) Korshik
Golenkinia radiata Chod.
Golenkinia sp.
Lagerheimia ciliata (Lagerh.) Chod.
L. quadriseta (Lemm.) G. M. Smith
Micractinium pusillum Fresenius
Oocystis crassa Wittr.
Pediastrum boryanum (Turp.) Menegh.
P. duplex Meyen
P. tetras (Ehr.) Ralfs
Scenedesmus acuminatus (Lagerh.) Chod.
S. bicaudata Deduss.
S. bijugatus (Turp.) Kütz.
S. quadricauda (Turp.) Bréb.
Siderocelis ornata Fott
Tetraëdron caudatum (Corda) Hansg.
T. incus G. M. Smith
T. minimum (A. Br.) Hansg.
Tetrastrum staurogeniaeforme (Schroed.)
 Lemm.
Treubaria sp.
 4. Ulotrichales
Raphidonema longiseta
Ulothrix sp.
 5. Oedogoniales
Oedogonium spp.
 6. Zygnematales
Closterium acutum (Lyngb.) Bréb.
C. ceratium Perty
Cosmarium abbreviatum Racib.
Cosmarium sp.
Spirogyra sp.
Staurostrum? tetracerum Ralfs

EUGLENOPHYTA

Euglena acus Ehr.
Phacus spp.
Trachelomonas spp. many different forms

XANTHOPHYTA

Botryococcus braunii Kütz.
Goniochloris mutica (A. Br.) Fott
G. smithii (Bourrelly) Fott
Tribonema sp.

CHRYSTOPHYTA

Mallomonas sp.
 occasional small flagellates and one
 amoeboid cell noted

BACILLARIOPHYTA

Achnanthes lanceolata Bréb.
Amphipleura pellucida Kütz.
Amphora ovalis Kütz.
Caloneis silicula (Ehr.) Cleve
Cocconeis pediculus Ehr.
C. placentula Ehr.
Cyclotella glomerata Bachmann
C. kuetzingiana Thwaites
C. meneghiniana Kütz.
C.? socialis Schütt
Cymbella cistula Ehr.
C. sinuata Greg.
C. ventricosa Kütz.
Diatoma vulgare Bory
Epithemia sorex Kütz.
Fragilaria brevistriata Grun.
F. construens (Ehr.) Grun.
F. pinnata Ehr.
Gyrosigma acuminatum (Kütz.) Rabh.
Navicula cryptocephala Kütz.
N. cuspidata Kütz.
N. gracilis Ehr.
N. hungarica Grun.
N. placentula Ehr. fo. *rostrata*
N. viridula Kütz.
Nitzschia acicularis W. Smith
N. amphibia Grun.
N. linearis W. Smith
Pinnularia viridis (Nitzsch) Ehr.
Rhoicosphenia curvata (Kütz.) Grun.
Stephanodiscus sp.
Stauroneis phoenicenteron Ehr.
Synedra acus Kütz.
S. ulna (Nitzsch) Ehr.
Tabellaria fenestrata (Lyngb.) Kütz.

PYRRROPHYTA

Occasional cells of *Peridinium* type

CRYPTOPHYTA

"*Cryptomonas erosa* Ehr."
 small blue or brown cryptomonads occasion-
 ally abundant.

Notes on Mammals of the London Area During 1963 and 1964

By JOHN A. BURTON

THE number of mammal records sent in each year continues to increase but still more are needed to give anything like a complete picture of the distribution of even the commoner mammals.

During 1965 the Society produced a recording map. This has enabled considerable progress to be made in the plotting of distribution and work has been started on mapping every species of mammal which occurs in the London Area. The Mammal Society of the British Isles is also mapping mammalian distribution. The M.S.B.I. scheme uses a 10-kilometre grid covering the whole of the British Isles and the L.N.H.S. scheme, which is analogous to that of the M.S.B.I., uses a 1-kilometre grid. Mapping the distribution of mammals is interesting from many points of view. It is, for example, very important to plot accurate distribution maps if decreases and other changes in populations are to be recorded. It is impossible to say that a species has declined and is less widely distributed than it was 10 years ago, if we do not know its status 10 years ago. This is one of the reasons why distribution maps are important to conservation.

It has been decided to break with the format for the Mammal Report used by my predecessors and, instead of dealing with each species exhaustively, comment on the more interesting occurrences and draw attention to areas where information is particularly lacking.

I would like to draw members' attention to the notes in a previous issue of the *London Naturalist* (Teagle, 1964 and Burton and Yalden, 1964) on methods of recording mammals. Harper and Morris (1965) and Morris (1965) discuss bottles as a source of mammal records. Large numbers of bottles are discarded annually, many of them in hedgerows and the countryside adjoining roads. Small mammals often enter these for a variety of reasons and are subsequently unable to escape. They soon die once trapped inside the bottle and the remains can be identified, thus providing information on the small mammals present in the vicinity.

Record sheets are now available from the recorder and all records should be entered on these if possible.

Records should be sent to: J. A. Burton, c/o Exhibition Section, British Museum (Natural History), Cromwell Road, S.W.7.

In the systematic list, following the accepted procedure, the initials appearing stand for the counties of Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex and Surrey. The other abbreviations used are as follows: G.C. = Golf Course, G.P. = Gravel Pit, L.N.R. = Local Nature Reserve, m.o. = many observers, R. = River, Res. = Reservoir, S.F. = Sewage Farm. The check list numbers are from Corbet (1964).

I should like to thank everyone who sent in records and apologise to anyone inadvertently not included in the list of observers. My especial thanks go to my predecessor, W. G. Teagle, without whose help I should never have completed these notes. Finally I should like to thank I. R. Beames, Dr. G. B. Corbet, A. M. Hutson, Miss J. King, P. A. Morris, Mrs. L. M. P. Small, Dr. S. D. G. Stephens and P. C. Tinning for their advice at various stages in the production of these notes.

LIST OF OBSERVERS

D. Alford, E. F. Anderson, M. S. Andrews, J. Auburn, J. Aylott, Miss A. Battershall, Miss B. Bayliss, Mrs. L. A. Beames, I. R. Beames, Beddington Ringing Station, D. J. Begley, G. Beven, P. F. Bonham, C. Bowlt, Miss L. Braham, J. A. Burton, N. J. Burton, C. P. Castell, Miss O. K. Chapman, E. Clark, I. A. Cooper, J. Cooper, Miss W. Cooper, G. B. Corbet, J. Crudass, R. Davis, Miss P. Driscoll, A. M. Easton, G. S. T. Elliot, Mrs. Elson, T. L. Evans, H. J. Freeman, Mrs. P. A. Freshwater, Miss M. Fryer, Mrs. M. A. Galloway, P. D. Gann, Miss P. A. Goldsmith, P. J. Grant, V. Green, G. H. Gush, J. F. Harper, D. L. Harrison, J. E. Harvey, E. H. Herbert, Miss E. M. Hillman, F. J. Holroyde, G. Holland, A. M. Hutson, K. H. Hyatt, K. Johnson, Miss M. Kennedy, A. S. Keith, R. Kettle, H. King, P. Kinnear, J. R. Laundon, Lewisham Nat. His. Soc., M. G. Manor, J. L. Mason, D. Massey, B. S. Meadows, R. McCleave, P. Meredith, Miss J. Morris, P. A. Morris, P. A. Moxey (PAM_y), A. F. Mussellwhite, J. P. Norris, A. Nowers, A. Paine, R. Parnell, D. Parr, B. P. Pickess, B. Potter, F. C. Reeves, R. C. Righelato, Rye Meads Ringing Group, M. Sheldrick, Mrs. L. M. P. Small, A. Smith, P. M. Solly, Miss K. Springett, S. D. G. Stephens, Mrs. J. F. Teagle, W. G. Teagle, P. C. Tinning, Mrs. B. Walker, Mrs. M. Waller, J. J. Walling, R. B. Warren, R. V. White, P. J. Wilson, Mrs. V. A. Wilson, Mrs. B. Winter, B. Winter, Miss Woads, D. W. Yalden.

SYSTEMATIC LIST 1963 and 1964

INSECTIVORA

1. HEDGEHOG. *Erinaceus europaeus* L.

This species is being dealt with in detail by P. A. Morris on page 43.

2. MOLE. *Talpa europaea* L.

A distribution map of this species appears on page 39 together with notes on its distribution.

3. COMMON SHREW. *Sorex araneus* L.

A distribution map of this species appears on page 40, together with notes on its distribution.

4. PYGMY SHREW. *Sorex minutus* L.

E The only record for Essex is one found dead on July 27, 1963 at Bankside (BB).

H Rye Meads, trapped on several occasions during 1964 (RMRG). Others recorded from Aldenham Res. (JLM) and from Broxbourne on Nov. 1, 1964 (BSM).

S Recorded from Hersham, Effingham, Oxshott, Esher, Reigate and Cobham. Most of these records refer to animals found dead in bottles (PAM, DWY).

This is a species which was very difficult to record as it is never as abundant as the Common Shrew and it is only since "bottling" has been used as a method of recording small mammals that it has been possible to get even the vaguest indication of its distribution. (This applies to all small mammals.)

5. WATER SHREW. *Neomys fodiens* (Pennant.)

A distribution map of this species appears on page 42, together with notes on its distribution.

CHIROPTERA

The observations quoted below concern only bats examined in the hand. At the present time there is no known method of identifying bats in flight with certainty.

11. WHISKERED BAT. *Myotis mystacinus* (Kuhl)12. NATTERER'S BAT. *Myotis nattereri* (Kuhl)14. DAUBENTON'S BAT. *Myotis daubentoni* (Kuhl)

These three species have been recorded fairly frequently near the border of the L.N.H.S. area in Kent and Surrey. They are probably well distributed but they are difficult to distinguish and, on account of their small size, they are often mistakenly identified as "pipistrelles". Any bats found dead will be gladly identified by the recorder. (Please send specimens wrapped in polythene.)

16. SEROTINE. *Eptesicus serotinus* (Schreber)

This species appears to be fairly widespread but there are not enough records to form any definitive picture.

H Rye Meads, mist netted and recorded on many dates in 1964 (RMRG, JJW).

K & S Several records from rural areas (DWY, PAM, RMcC). From the number of positive identifications made it would appear that this species is more widespread than the Noctule, but the Serotine is more often found in buildings than the Noctule.

17. LEISLER'S BAT. *Nyctalus leisleri* (Kuhl)

This is a species which should be looked for carefully as it has now been found in the London Area (1965), at Kew and Walton-on-Thames.

18. NOCTULE. *Nyctalus noctula* (Schreber)

There are still too few records to give any accurate idea of the distribution of this species.

H Rye Meads, caught on several dates (RMRG, JJW) Broxbourne, 1 shot on Nov. 14, 1964 (RMcC).

S Weybridge, 2 caught Mar. 1963 (PAM, JA); Beddington, mist-netted June-July 1964 (JAB, AMH).

19. PIPISTRELLE BAT. *Pipistrellus pipistrellus* (Schreber)

Although it is very probable that most small bats are in fact pipistrelles, it is impossible to identify them for certain in flight. There are remarkably few definite records of this species and details of roosts as well as any corpses would be most welcome.

E Ilford, 1 found dead Feb. 6, 1964 (BB).

H Rye Meads, 5 mist-netted during the summer, 1964 (RMRG).

M Bushy Park, 3 mist-netted Aug. 2, 1963 (PAM, DWY).

S 1963-64, mist-netted at Walton-on-Thames, Esher, Beddington and Godstone (JAB, AMH, PAM, DWY); Caterham, 2 shot Oct. 1964 (RMcC).

21/22. LONG-EARED BATS. *Plecotus* spp.

The only new locality found during the years under review was Bushy Park (M), where one was caught on Aug. 8, 1963 (PAM, DWY). Specimens from known localities have been critically examined, and have so far all

been of the common species *Plecotus auritus* (L.). The diagnostic features of the Grey Long-eared Bat *P. austriacus* (Fischer), only recently found to occur in the British Isles, have been described by Corbet (1964B).

CARNIVORA

24. FOX. *Vulpes vulpes* (L.)

A paper on this species by W. G. Teagle is being prepared, and it is hoped to publish it in the next issue of the *London Naturalist*.

27. STOAT. *Mustela erminea* L.

28. WEASEL. *Mustela nivalis* L.

These species are dealt with on pages 35-37, together with distribution maps.

31. BADGER. *Meles meles* (L.)

Unfortunately there has been very little response to the request in the last mammal report for information about Badgers within the Society's area north of the Thames. If anyone has any information about this area or anywhere else, the Mammal Society's official Badger recording forms can be obtained from the Recorder for Mammals, J. A. Burton.

There is now a considerable amount of information about Badgers in parts of Kent and Surrey, but there are still large gaps in our knowledge even in these areas. A paper dealing with this species is planned for the future.

PINNIPEDIA

34. GREY SEAL. *Halichoerus grypus* (Fabricius)

K One, stranded on the fore-shore at Woolwich, was identified from press photographs as this species; Oct. 30, 1964 (*Daily Mirror* and *Daily Mail*).

35. COMMON SEAL. *Phoca vitulina* L.

S. One, found on the Thames fore-shore at Wandsworth, was identified from press photographs. The animal was taken to Chessington Zoo. *Evening News*, Aug. 17, 1964.

ARTIODACTYLA

Deer records are still very rare, and all sightings even if the species is not determined, would be very useful. Roe Deer appear to be extending their range into the Society's area and a map and more detailed description of this species appears on page 38.

Recently Muntjac deer have been identified in the London area as close in as West Ham and Barnes Common and it is quite possible that they will spread into other parts of the Society's area.

LAGOMORPHA

53. BROWN HARE. *Lepus capensis* L.

Many observers believe that this species has declined over the last few years but there are not sufficient records to show any definite decrease. Any records, particularly old ones, would be very useful.

The following is a list of localities where hares were recorded during the years under review.

- E Chingford (PFB); East Cranham (GSTE); Nazeing G.P. (BSM); Epping Forest (JEH).
 H Rye Meads (RMRG); The Ridge (ASK); Broxbourne (RMcC).
 K Pratts Bottom (PCT); Rams Wood (BW); Ruxley G.P. (VG); Otford (GBC); Longfield (AFM); Downe (RVW); Lullingstone (PDG).
 M A report in *The Guardian* of Sep. 26, 1963 described how a lorry driver caught a hare in Fenchurch Street in the City of London! The hare was handed to a policeman who passed it on to the R.S.P.C.A. Other localities from which hares were recorded: Trent Park (CB).
 S Egham; Ripley; Leatherhead; Cobham; Downside (PAM, DWY); Bookham (GB); Hersham S.F.; Addlestone; Pains Hill (GHG); Richmond Park (FCR).

55. RABBIT. *Oryctolagus cuniculus* (L.)

Records for this species give a very unreal impression of its distribution. There are far too few records, particularly from suburban areas where they are, in many cases, abundant. They often occur well into the urban areas and the population nearest to the centre of London is, in fact, in Hyde Park.

57. GREY SQUIRREL. *Sciurus carolinensis* Gmelin

It is nearly ten years since a paper appeared in the *London Naturalist* on the distribution of the Grey Squirrel in the London Area (Beven, 1957). It is hoped to publish a follow-up paper, but in order to do this more information is needed from the inner suburbs. Records of particular interest are those concerning albino Grey Squirrels in Surrey. There are records from: Beddington (MSA, JRL), Kenley (HJF), Whyteleafe Green (PJW) and Carshalton (AVF). Any further records of albino Grey Squirrels would be welcome.

59. DORMOUSE. *Muscardinus avellanarius* (L.)

Since the last report for mammals in London was published the existence of Dormice in the area has been confirmed in three localities, with a total of five records. It is very likely that, as in the case of the Harvest Mouse, the Dormouse has been overlooked, possibly because searches are being made in the wrong places, or as is more than likely, it is not all that abundant now and not found by naturalists. It is not readily caught in traps and is very rarely seen.

61. HARVEST MOUSE. *Micromys minutus* (Pallas)

A detailed account of this species is given in Teagle (1964B). Since its publication no new localities have been found although further records from the known localities have been received.

62. WOOD MOUSE (LONG-TAILED FIELDMOUSE). *Apodemus sylvaticus* (L.)

The Wood Mouse is almost certainly much more widespread than the records suggest, but very few of the observers who send in records of this species have eliminated the possibility of its being a Yellow-necked Mouse or in many instances the possibility of House Mouse.

Below are some of the records from the more built-up areas.

- E Woodford, 1 dead May 9, 1964 (MS).
 K Bromley, 2 caught indoors Feb. 1964 (GBC).
 S Putney Heath, 1 caught in a Longworth trap, Oct. 22, 1963 (PAM, DWY); Norbury (Nr. Croydon), seen frequently and occasionally trapped (JAB).

The above records are far from complete but nearly all the other records are from outside the built-up areas. It is the animals living in the suburbs which are of particular interest, and the Recorder for mammals will be only too pleased to help with identification of remains from pellets, bottles, etc.

63. YELLOW-NECKED MOUSE. *Apodemus flavicollis* (Melchior)

From the records it would appear that this species is relatively abundant in N.W. Surrey, but entirely absent elsewhere in the London Area. This may or may not be the case, but as things stand at the present time, this curious distribution is arrived at because so far the only people to make careful searches for this species live in the Esher area!

67. BANK VOLE. *Clethrionomys glareolus* (Schreber)

There has been a significant rise in the number of records of this species. This is mainly due to the work that has been done in N.W. Surrey by P. A. Morris and D. W. Yalden. (This also applies to most other species of small mammal.). This species can be found in bottles and in bird of prey pellets and careful examination of these would probably produce a reasonably accurate distribution map.

68. WATER VOLE. *Arvicola terrestris* (L.)

Most observers seem to be of the opinion that the Water Vole is fairly widespread and common. The fact that for 1963 and 1964 only 27 observations of this species for the whole of the London area were sent in seems to contradict this. More positive records of Water Voles are needed. (N.B. Water Voles can often be confused with Brown Rats).

69. SHORT-TAILED VOLE (FIELD VOLE). *Microtus agrestis* (L.)

Much of what has already been written about the Bank Vole also applies to the Short-tailed Vole.

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The Distribution of Weasel, Stoat, Common Shrew, Roe Deer, Water Shrew and Mole in the London Area

By JOHN A. BURTON

INTRODUCTION

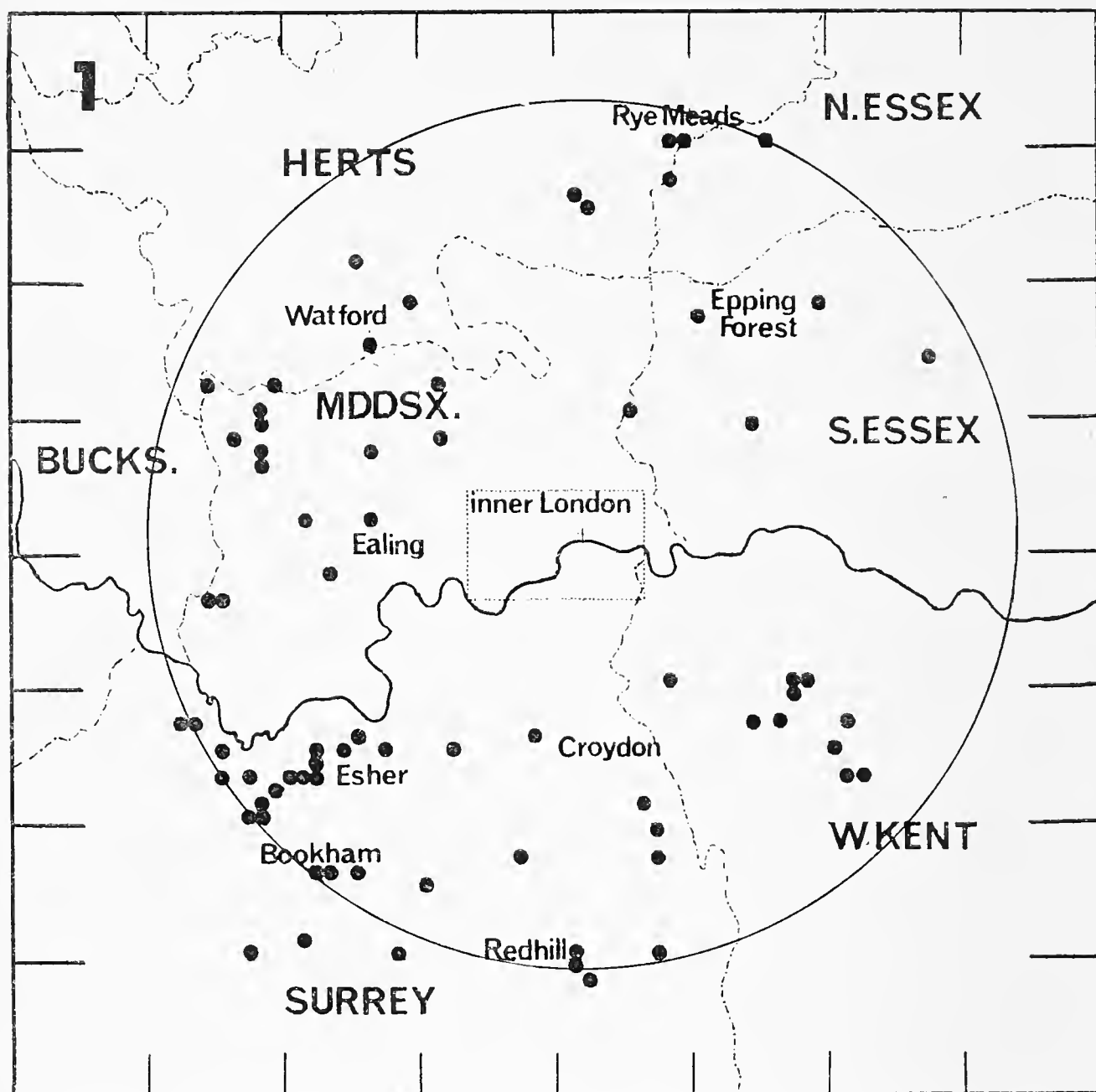
THIS description of the distribution of six mammals occurring in the London Area is, to a very large extent, an experiment. The maps are the most important feature of this description and they are intended to be an interim report rather than the final distribution. The maps are also being published in order to gather information about presentation. I shall be very glad to receive any criticism or comments on the form in which these six maps have been published. For each species the map has been produced in a different manner, but retaining the same basis structure to enable comparisons to be made between different maps. On a map this size it is impossible to include a large number of features, therefore selection of the features to be shown was necessary. In the case of the Mole (map 6) any information, other than the actual records of Moles, would have made the map confusing. The distribution of Weasel and Stoat (maps 1 and 2), on the other hand, is considerably more restricted and so other features were added to these maps.

The sort of questions which need to be answered by the readers of this note are:

1. Should each map have the ten-kilometre grid marked,
 - (a) all over (see map 3),
 - (b) around the edge (see map 1),
 - (c) not at all (see maps 2, 4, 5 and 6)?
2. Should each map have place names marked on it or not?
3. Which form of marking is preferred,
 - (a) the large spot (see map 2),
 - (b) the medium spot (see map 6),
 - (c) the small spot (see map 3),
 - (d) the open spot (see map 5),
 or should each square be filled in (see Hedgehog, page 44)?
4. Does the additional information, such as the extent of the built-up area merely confuse the map or is it helpful?

THE DISTRIBUTION OF WEASEL (*Mustela nivalis*) AND STOAT (*Mustela erminea*) IN THE LONDON AREA (MAPS 1 and 2)

The Weasel and Stoat are both species which are difficult to observe in the London Area. They are never particularly abundant even in the areas where they are most frequently seen. Consequently even the keenest mammalogist will rarely see or trap them. Most of the records of Weasel and Stoat come from casual observers and not the specialist searching for mammals. An active ornithologist probably stands more chance of seeing these two species than the mammalogist, who usually has one eye looking for tracks and the other looking for bottles. The ornithologist often covers quite long distances in the course of a day in the field and is far more likely to disturb a Weasel or a Stoat.



Distribution of Weasel (*Mustela nivalis*) in the London Area (1960-1964). N.B. The grid indicated is the 10 km. National Grid. The L.N.H.S. recording area is embraced by a circle of radius 20 miles, centred on St. Pauls. This circle is indicated on all maps.

Weasels and Stoats are very similar in appearance, but fortunately most people seem to be acquainted with this fact and make a special point of taking field notes. In the adult animal distinction between the two species is fairly straightforward as the Stoat is usually larger and has a black tip to the tail; but there is considerable overlap in size between the two species. In late summer Weasels could easily be confused with young Stoats. More detailed descriptions of these two species (and all other British mammals) can be found in the Handbook of British Mammals (Southern, 1964).

The records of Weasel and Stoat, for the reasons stated above, are mainly from casual observers. Consequently they suffer far less from the local bias to the south of the Thames than any other species. These two maps throw considerable light on one point: the Stoat is almost entirely absent from Middlesex. The only record, during the period under review, is within 2 km. of the Middlesex/Buckinghamshire border.



Distribution of Stoat (*Mustela erminea*) in the London Area (1960-1964). The shaded area indicates the approximate extent of the built-up area.

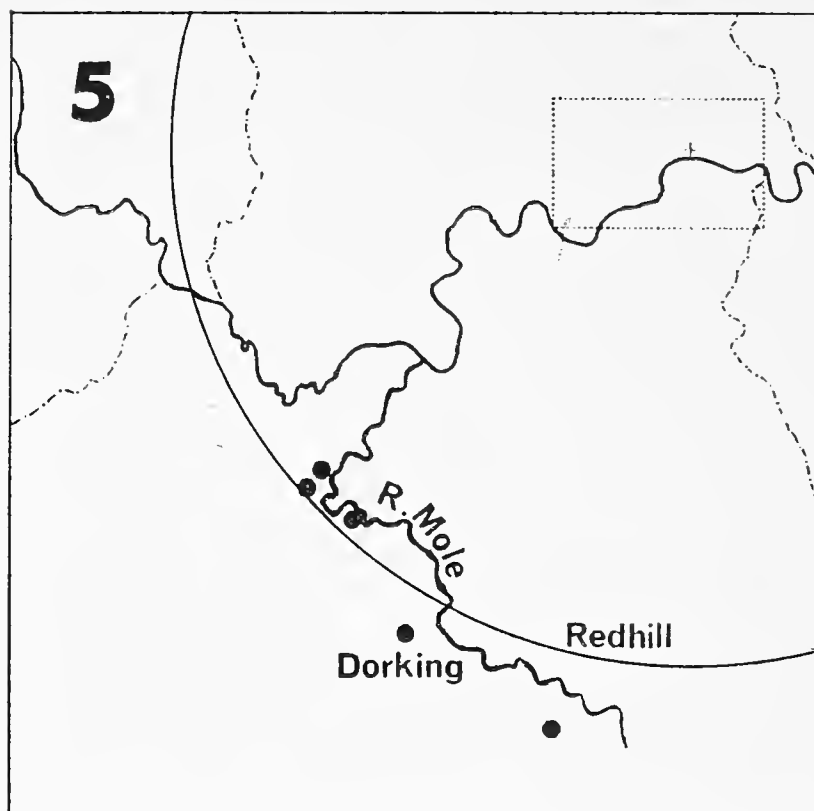
Weasels, on the other hand are widespread with 14 records in Middlesex. Elsewhere the Weasel is usually more abundant than the Stoat.

The localities from which these two species have been recorded include a large number of "birdwatchers' " haunts, e.g. Perry Oaks, Beddington and Hersham S.F., Rye Meads, Walthamstow Res., Brent Res., and Ruxley G.P.

The records used for compiling these two maps are exclusively those for 1960-1964 (inclusive).

THE DISTRIBUTION OF THE ROE DEER *Capreolus capreolus* (L.) IN THE LONDON AREA (MAP 5)

This map shows a small section of the London Area, in Surrey. The Roe Deer is one of the smaller deer found in this country (it stands 22" at the shoulder). It is, therefore, relatively easy for it to escape attention. The Roe Deer appears to have been extending its range (Chard, 1964), but the literature on its range is very vague. Taylor-Page (1957) states



Distribution of the Roe deer (*C. capreolus*) in the London Area.

that the Roe Deer is present in N.W. and S.W. Surrey in "fair numbers". The map shows the few records received to date. So far the Roe Deer does not appear to have established itself East of the R. Mole. There is a record from the Eastern side of the R. Mole, but this is unconfirmed.

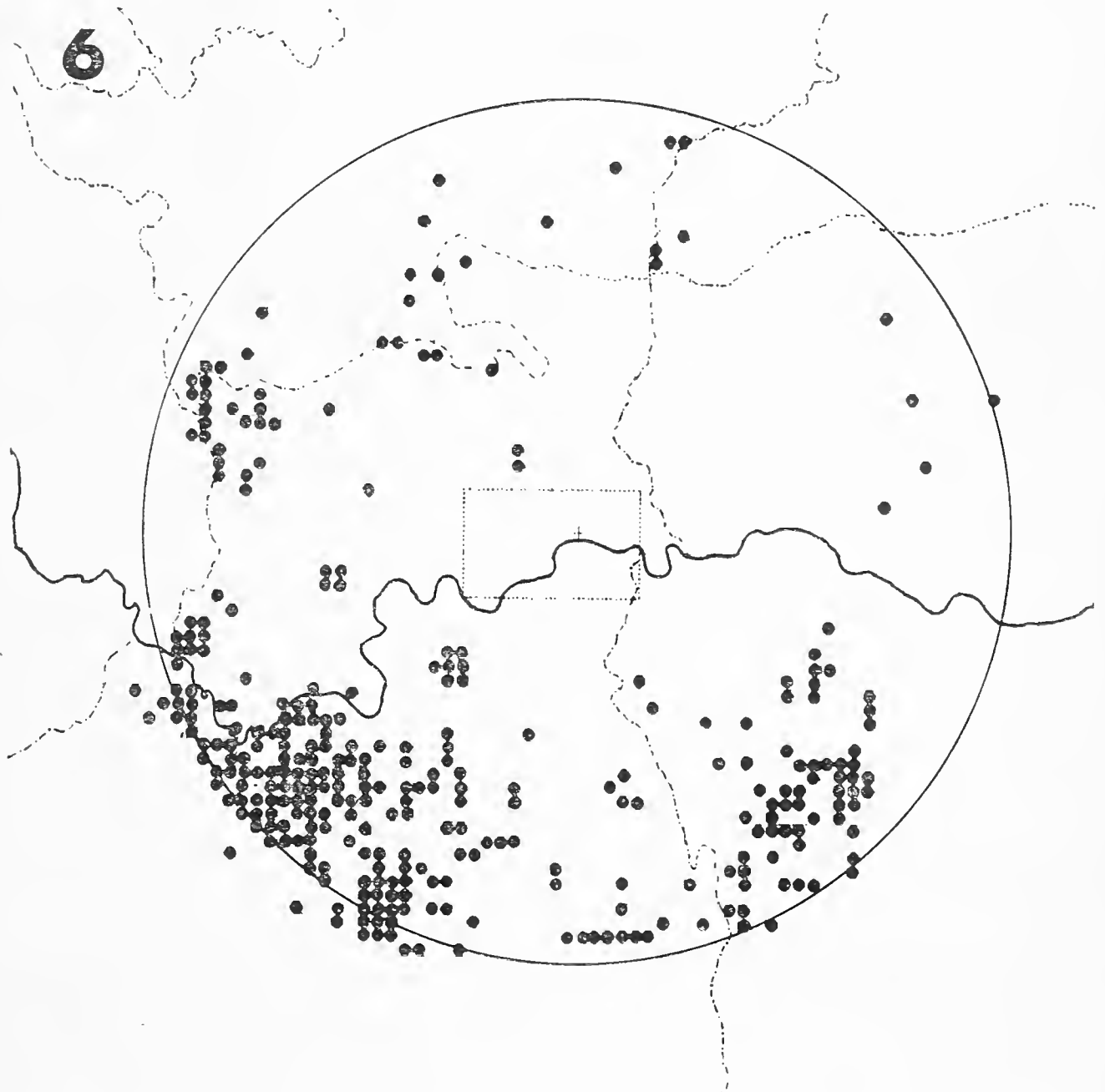
The presence of Roe Deer can be detected from the tracks and signs they leave, if they are not seen (for descriptions of the tracks and signs, see Taylor-Page, 1957). Other species of deer which occur wild or feral in the London area are Fallow Deer, *Dama dama* (L.) and the Muntjac, *Muntiacus reevesi*. The Chinese Water Deer, *Hydropotes inermis* Swinhoe., and the Sika Deer, *Cervus nippon* Temminck, may also occur in the London Area. The Roe Deer is probably most likely to be confused with the Muntjac. A detailed description should be taken of any deer seen, together with sketches of tracks and samples of droppings. Muntjac have been recorded most frequently from the Northern limits of the L.N.H.S. area, in Hertfordshire. Recently it has been identified as near to the centre of London as West Ham and Barnes Common.

THE DISTRIBUTION OF THE MOLE *Talpa europaea* L. IN THE LONDON AREA (MAP 6)

The Mole is one of the easiest mammals to record. It is very rarely seen, but can easily be recorded by the signs of its activity, which are very often clearly visible. In the course of its burrowing activity the Mole throws up mounds of earth known as mole-hills or tumps. It is known that the Water Vole, *Arvicola terrestris* (L.) often lives away from water (Southern and Crowcroft, 1956), and Water Voles sometimes leave mounds similar to those of Moles. There is no evidence that Water Voles are commonly terrestrial in the London area, however.

In the rural areas of London the Mole is abundant. It also occurs well into the suburbs. The mole suffers wherever it comes into contact

with man. Man does not tolerate an animal which is so adept at throwing up heaps of soil on Bowling Greens, Lawns, Gold Courses, Cricket Pitches etc. Since these amenities tend to be on the outskirts of the suburban areas, persecution is steadily reducing the animal's range. It is not known what size of population, and what density is needed for the Mole to maintain itself. Small patches of woodland may form natural refuges for moles and as their activities do not conflict with human interests in such places, it is likely that isolated populations may persist for some while. If the woodland is small, a drought could have a disastrous effect on a Mole population, and once wiped out there is often no chance of re-introduction in suburban woodlands. The map shows populations which are found well into the suburban areas. Moles appear to be absent from some of the fairly large open spaces, such as Bushy Park and Richmond Park (PAM, DWY), Dulwich Woods and Dulwich Park (JAB). They are present on Elmers End S.F. (PK), but it is probable that they will die out when the site of the Sewage Farm is "developed". Moles also survive on Hampstead Heath (PAMy, JM). All records of Moles



Distribution of the Mole (*Talpa europaea*) in the London Area (1960-1965).

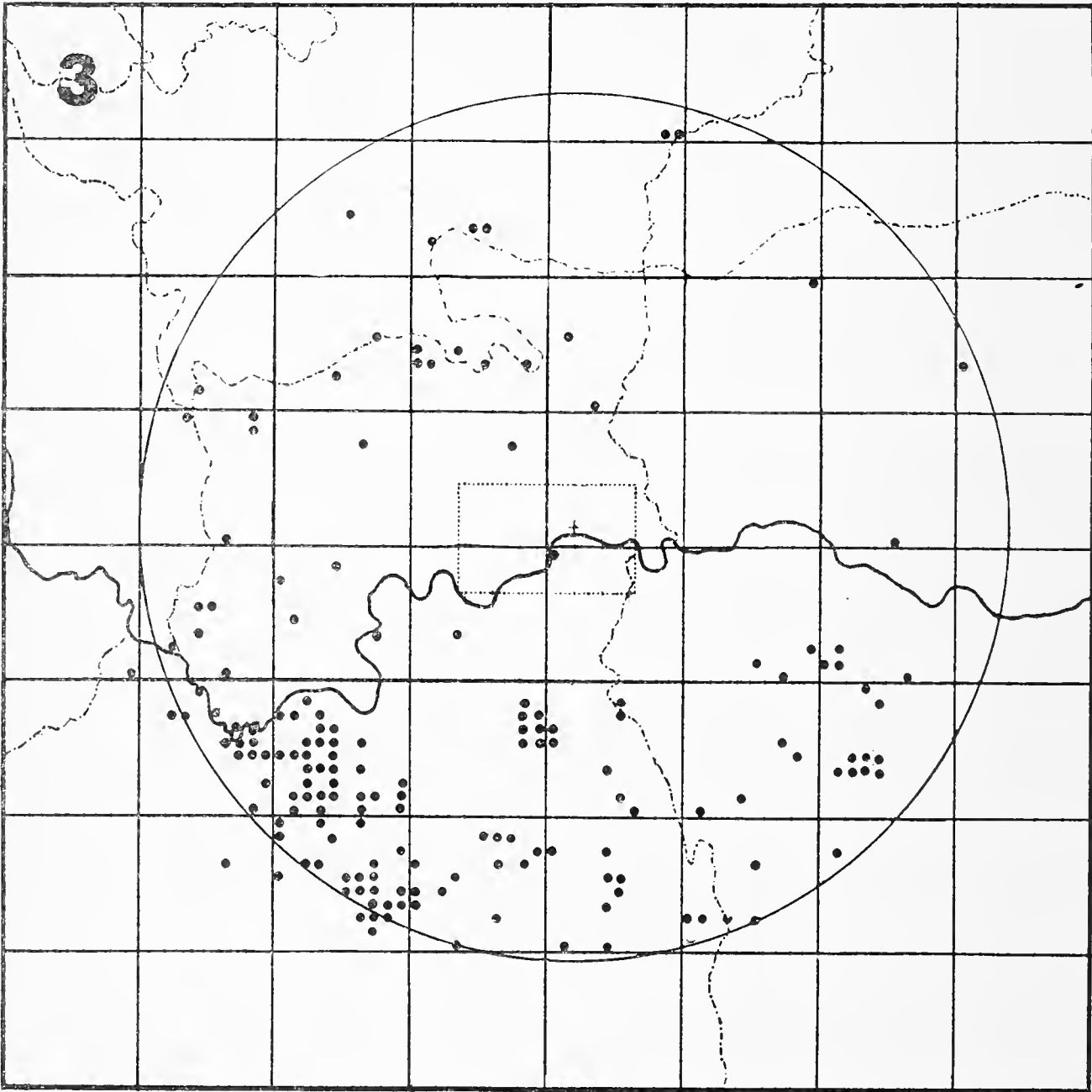
from suburban and urban areas, together with an indication of the habitat available to the animals should be sent to the recorder for mammals, in order that more accurate maps can be plotted.

The records used in compiling this map are for the years 1960-1965 (inclusive).

THE DISTRIBUTION OF THE COMMON SHREW (*Sorex araneus* L.)
IN THE LONDON AREA (MAP 3)

This species, in common with other small mammals, was at one time very difficult to locate. Since bottles have been used for studying mammal populations there has been an increase of approximately 200% in the number of records for this species each year. The last record for Hampstead Heath would appear to be in 1914 (Fitter, 1949), but they have been rediscovered there in bottles (PAM, DWY).

The Common Shrew suffers, like most small mammals, at the hands of Man. Its habitat is disturbed and destroyed and, unlike the mole, it has



Distribution of the Common Shrew (*Sorex araneus*) in the London Area (1960-1965).

a large number of predators. A Common Shrew population could, therefore, very easily be obliterated by a combination of factors including habitat destruction, predators (mainly owls and cats in the suburban areas) and hard weather. The effects of habitat destruction and hard weather are difficult to ascertain, but the effects of predation are relatively easy to measure. Analysis of the pellets formed by birds of prey provides a fairly good guide to the abundance of small mammals, but allowances for the prey preferences of the different species of owls and hawks involved should be made (Southern, 1954). Beven (1955 and 1965) has described the results of the analysis of owl pellets from Bookham Common, and Brown (1963) from Holland Park.

The Common Shrew undoubtedly survives in many places in the suburbs. Apart from parks and commons there are areas of waste ground, large gardens and the railway embankments, many of which could support a population of shrews. It is difficult to locate these populations but diligent searching, using the various methods mentioned previously, could yield very useful results.

In the Society's area, South of the Thames we are gradually building a definitive idea of the distribution of the Common Shrew but North of the Thames, apart from a few records along the Hertfordshire/Middlesex border, there is very little known. As with most species, there is only a handful of records for Essex. There is one record for Inner London. This was seen in Archbishops Park, Lambeth on Oct. 12 1961 and thought by the observer to have been accidentally introduced with turves (GHG).

The records used in producing this map are those received for the years 1960-1964 (inclusive) and also all the records for 1965 which had been received by Feb. 1, 1966.

THE DISTRIBUTION OF THE WATER SHREW (*Neomys fodiens* Pennant) IN THE LONDON AREA (MAP 4)

The Water Shrew is an animal rarely seen by most naturalists and consequently records of this species have been very difficult to obtain. Bottles, however, have helped rectify this lack of knowledge. In the south and south-western parts of the Society's area, Water Shrews have been found in bottles, often some considerable distance from water. For example, Water Shrews have been found in bottles on the top of the downs at Walton Heath (PAM). It is now known for certain that *Neomys fodiens* is not restricted to a watery habitat, as described by many older books. In the London area the Water Shrew is more likely to be found away from water with the increasing frequency of pollution. This occurs not only at sewage outfalls (which sometimes have a stimulating effect on life), but also when waste matter from factories is carried away by rivers and streams. Another possible source of pollution is from the toxic seed dressings which are causing much alarm amongst naturalists. Some of these chemicals must be washed from the soil into ditches and streams in significant quantities and possibly cause considerable damage to the wildlife found there.

The Water Shrew is probably declining in the London area but more information is needed to ascertain how badly it is suffering and where. The map shows only too clearly the areas from which information is lacking. The records used to compile this map were those for the years 1960-1964 (inclusive), and also records for 1965 received by Feb. 1, 1966.



Distribution of the Water Shrew (*Neomys fodiens*) in the London Area (1960-1965).

CONCLUSION

Although these maps are in many ways incomplete, they do show that considerable progress is being made in recording the distribution of mammals. These maps are not intended as the final result but only as a progress report. It is hoped that members will help to complete the maps by submitting records, particularly for areas where little is known. It is still very important to send in records for localities already on the map, in order that any changes in distribution can be recorded accurately. It is hoped that in future years, a detailed account of a selected species will appear with the mammal report (*vide* Teagle, 1964).

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The Hedgehog In London

By P. MORRIS

INTRODUCTION

THE Hedgehog *Erinaceus europaeus* is a common, fairly large and quite unmistakable animal. Consequently it is more frequently recorded than most of London's mammals, with the result that sufficient information is now available to show more than a mere distribution pattern.

Although the London Natural History Society has been collecting mammal records for many years, the information received for the period prior to 1960 was often scanty and incomplete. Fitter (1949) summarised the distribution of the Hedgehog in the Society's recording area (a circle of 20 miles centred on St. Paul's Cathedral) for the first half of the century and concluded that the animal was common in both the rural and suburban parts. The present paper covers the years 1956 to 1964 inclusive, and some idea of the volume of observations for this period is shown in Table I.

TABLE I

Year	Total no. Hedgehogs recorded
1956-9 incl.	239
1960	173
1961	239
1962	180
1963	272
1964	370
	<hr/> 1,473 <hr/>

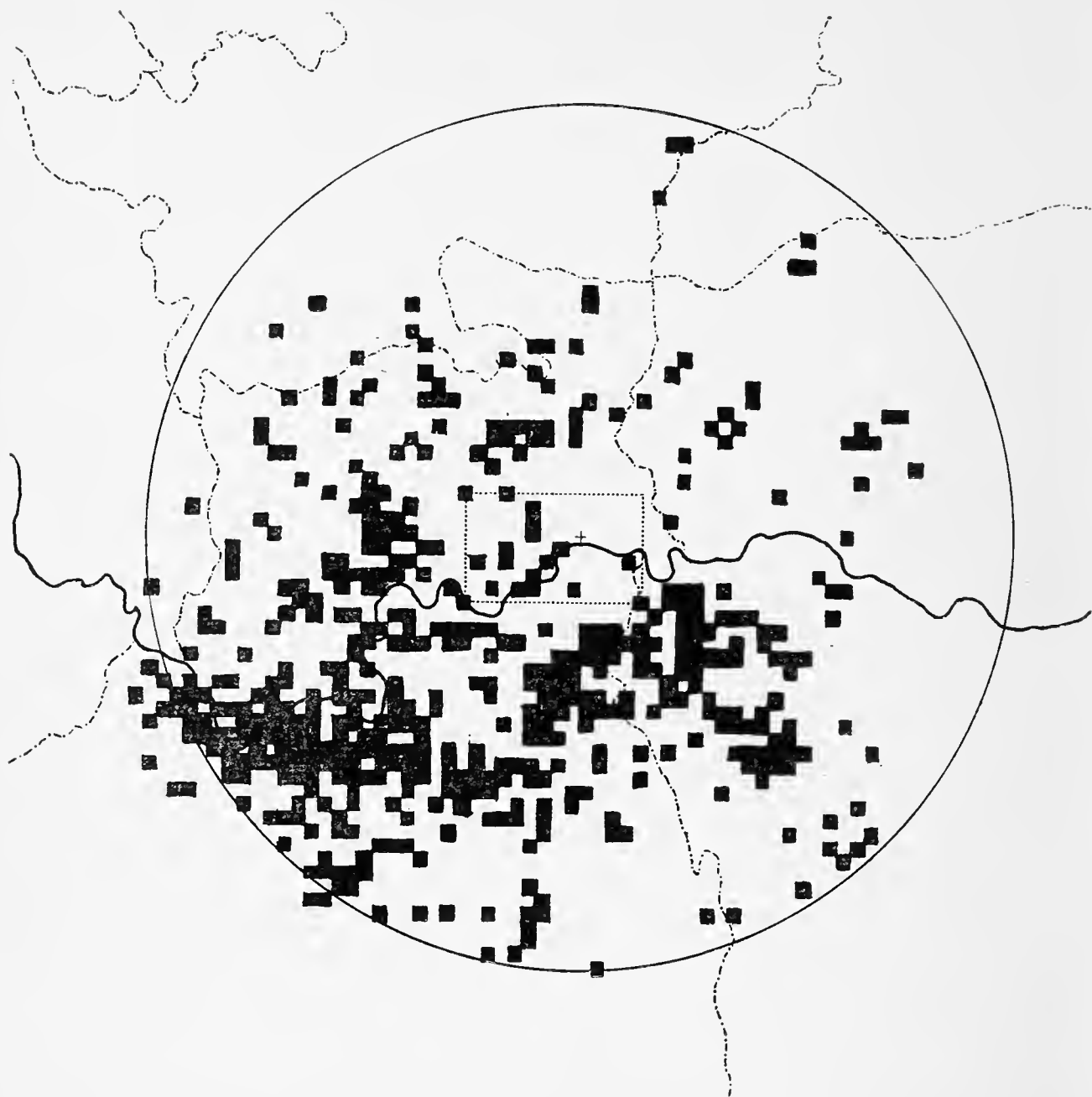
These totals may be inflated by the inclusion of some animals which have been recorded more than once (e.g. those which regularly visit a particular garden). On the other hand, where no number is given by the observer, it is assumed that only one Hedgehog was present, though in fact there may well have been several. Most of these records have been referred to briefly in the Mammal Reports of the *London Naturalist* (Teagle, 1963, 1964, 1965).

No attempt is made here to give a general account of the natural history of the Hedgehog, such information being available in Harrison Matthews (1952), Southern (1964) and Herter (1966).

THE DISTRIBUTION OF THE HEDGEHOG

It is unfortunate that most of the more assiduous observers live south of the Thames so that the Hedgehog's distribution is well charted in the Kent and Surrey sectors and very poorly known in Hertfordshire and Essex. There are only two records from Buckinghamshire, both from a non-member. Where possible the individual records have been assigned to their appropriate National Grid Square and plotted on one of the Society's distribution maps. This can be seen on page 44.

In Central London there are few private gardens large enough to support Hedgehogs, and fewer still that are wild and undisturbed. Consequently, with the exception of one animal seen in Fulham, another at Chelsea and one at Goldsmith's College, New Cross, the present distribution is concentrated around the parks. Hedgehogs are often seen in



Distribution of the Hedgehog (1956-65) in the London Area, plotted on a 1 km. grid. The circle is of radius 20 miles centred on St. Pauls.

Regent's Park, Battersea Park and Kensington Gardens. As Teagle (1964) points out, these animals are observed sufficiently frequently to suggest that they represent a wild breeding population and not merely odd escaped pets. In Holland Park there were Hedgehogs present up to and including 1958, but in 1959 only one animal was found, and this was dead (Brown, 1963). Single animals have also been seen in St. James' and Southwark Parks. One caught in the Admiralty building in Whitehall (*The Times*, May 26, 1961) was clearly way off course.

It is evident that the Hedgehog is still abundant in many inner suburban areas such as Streatham, Dulwich, Forest Hill, Blackheath, Acton and Hornsey. These places are well provided with open spaces, some of them quite extensive, e.g. Streatham Common, Dulwich Woods, Greenwich Park, and Highgate Woods. In addition there are many old houses with large, often unkempt gardens in which Hedgehogs could survive indefinitely. Here the most serious threat to the animal is urban development. Many old houses standing in large gardens are now being pulled down so

that a greater number of small houses can be erected in their place. During this process the old gardens are built over or tidied up and rendered uninhabitable to mammals, at least temporarily. Natural reinvasion of such places will only occur if there is some local reservoir of animals living in a place which has not been disturbed. All too often there is not.

Outside Central London large parks and public gardens still form important sanctuaries for many mammal species. Hedgehogs are reported from such places as Gunnersbury Park, Osterley Park, Horniman Gardens and Wandsworth Common. In Bushy Park Hedgehogs are common, but there is no information on the nearby Home Park and adjacent Hampton Court Gardens. The Hedgehog appears to be absent from Richmond Park. The Park's well informed Gamekeeper, Mr. H. M. Wonham, states that in 16 years he has never seen a Hedgehog there. Collenette (1937), who was very familiar with the Park in the 1930's, never found one either. However he was told that they had been seen occasionally by members of the Park Staff. The skin of a Hedgehog was found in Sidmouth Wood by R. H. Kettle in 1961, but this may have been imported by some other animal.

In the outer suburbs (such as Weybridge, Esher, Cheam and Orpington), where gardens are large and there are plenty of hedges, allotments and open spaces, the Hedgehog thrives. Indeed it seems to be more common in such places than in entirely rural areas, and it is likely that a quiet suburban garden represents the ideal habitat for this animal. Garden fences present little obstacle and the Hedgehog is thus free to wander over a wide area containing a selection of compost heaps, sheds and shrubs in which to nest. There is abundant food in the form of garden pests (slugs, snails, worms, etc.) and often large quantities of bread and fat put out for the birds. Best of all, there are many people who regard Hedgehogs as free-ranging pets and deliberately put out plates of food for them. Under these ideal conditions, with few enemies, it seems probable that a bigger population of Hedgehogs will survive than in a truly rural area of woodland, cornfields and pastures.

From the present rather patchy information it is difficult to determine which areas are unsuitable for Hedgehogs (apart from obvious places like the runways of London Airport or the middle of a large reservoir). It has been suggested that since Badgers will eat Hedgehogs, the latter are rare or absent in the vicinity of badger setts. However, for many weeks Hedgehogs and Badgers used to visit my garden to take food put out for them, and on one occasion both species were photographed together. The apparent absence of Hedgehogs near badger setts may be due to the fact that setts are very often found in sandy areas. In such places the soil is frequently quite acid and it is known that Hedgehogs as a rule are rare on acid soils. It is thought that this may be due to the scarcity of molluscs, an important part of the Hedgehog's diet. It could also be that sandy soils are merely well drained and generally deficient in Hedgehog food, on the other hand alkaline calcareous sands (sand dunes for instance) are also well drained, but molluscs are abundant and Hedgehogs are often quite common in such places. The apparent scarcity of Hedgehogs, if genuine, in the neighbourhood of Badgers may not be due to the predaceous activities of the latter but simply to the absence of an important source of Hedgehog food, in sandy areas at least.

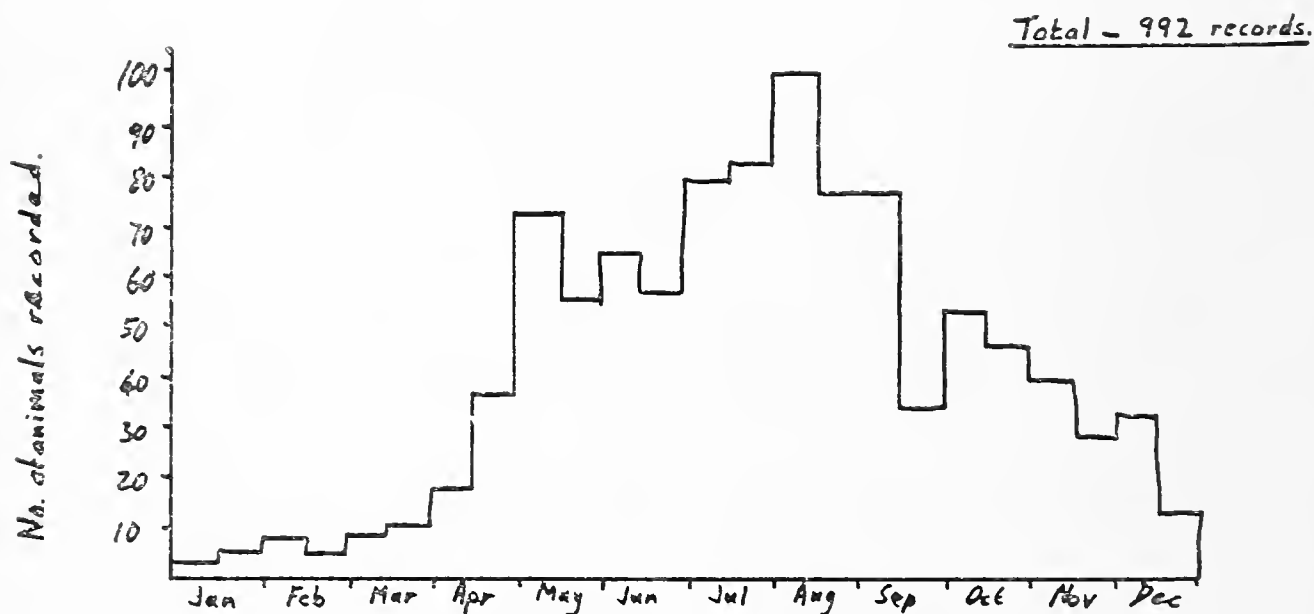
It is noteworthy that observers living on the outskirts of London often record Hedgehogs in rural areas, but these are almost always near

buildings of some sort. Reports of sightings or road deaths from roads passing through open farmland or large woods are few; though where the same road passes by houses and gardens many hedgehogs may be recorded. This is seen particularly well on part of the A244 South of Esher. I travel this road very frequently and have records of 17 Hedgehogs dead on the first half mile out of Esher where there are large gardens on each side of the road. For the next one and a half miles the road is flanked by Esher and Arbrook Commons (deciduous woodlands with large stands of pine trees in some parts) and there are no records for this section at all; only later, where the road passes through Oxshott, are further Hedgehogs occasionally seen. It seems reasonable to suggest again that the optimum habitat for the Hedgehog is not woodland or farmland as is often stated, but suburbia.

ACTIVITY AND HIBERNATION

In the period 1956-1964 there are 992 *dated* records of Hedgehogs. Fig. 1 shows the number of records for each half of each month. Roughly speaking the more active Hedgehogs there are about, the more they will be observed and recorded. There are objections to this, so it cannot be said that the number of Hedgehog records is *exactly* proportional to the total number of animals which are active at that time. For instance it could be argued that in summer the nights are warm so more people are likely to be out of doors after dark and will thus see more Hedgehogs, resulting in a disproportionately large number of observations in summer. However,

FIG. 1. RECORDS 1956-64 : No. of Records for each Half Month.



the marked increase of records in June, July and August is not due to a greater increase in sightings, but almost entirely to an increase in the number of dead animals found, mainly road casualties. Again it can be argued that traffic on the roads is heavier in summer so more animals will be run over, but traffic in London is very heavy all year round. Be that as it may, more records almost certainly reflect the presence of more

Hedgehogs in an active state. Fig. 1 therefore represents the active population at different times of the year, comprising young which have left the breeding nest and non-hibernating adults.

From the frequency with which Hedgehogs are recorded in different months it can be seen that there is no sharp drop in numbers observed at the beginning of winter as all animals retire to hibernate at once, but a gradual decline as the general level of activity falls. It is possible that many of those individuals which remain active during the early winter are animals of the second litter born as late as October. These would have insufficient time to accumulate the necessary large fat reserves before the cold weather set in and would thus be compelled to continue to forage whilst the older animals were already hibernating.

During hibernation the animal's heart beat and respiratory movements slow to a fraction of the normal rate and the body temperature may drop from around 35°C to less than 10°C. Thus hibernation is not merely a prolonged period of normal sleep, but a complete physiological readjustment.

However, despite this and contrary to general belief, hibernation is not necessarily an unbroken period of inactivity lasting from autumn round till the following spring. Some Hedgehogs may wake up periodically and search for food. These few account for the animals noted during the months of January and February. The general reawakening must depend to some extent on the weather, but seems to take place about the beginning of April.

BREEDING

Published observations on the breeding of the Hedgehog (Morris, 1961) indicate that there are probably two breeding seasons per year. Females were found to be pregnant from May to October, with an early peak about June and a later peak in September. The gestation period is about one month, so the peak of pregnancies in June would correspond to a mating period in May. Increased activity at this time, associated with the onset of the mating season, possibly accounts for the large number of Hedgehogs noted in early May.

During July, August and September, greater numbers of Hedgehogs are observed than at any other time, so it is presumed that it is in these months that the majority of the young leave the nest and thus enter the "active population". In September there is a sharp drop in the observed number of Hedgehogs. This may be the result of inactivity in females having their second litter, or it could be that many of the more active recorders go away for their holidays at this time. Following this, in October, there is a rise in the number of records which may in part be due to the influx of second litter young. However, there are far fewer records in all than for the early breeding period, indicating that the active population is not being increased by such a large number of young animals as previously. There are two likely reasons for this. One is that relatively few females produce a litter at this time, having probably already had one earlier in the year; and secondly it is also possible that, since food supplies are becoming scarce by October, many late born young die before leaving the nest and therefore do not contribute to the active population represented in Fig. 1.

In the period covered by this paper there are records of 13 nests containing young.

TABLE II

	April	May	June	July	Aug.	Sept.	Oct.	Total
No. of nests.	1	1	0	4	2	2	1	11
Total no. of young	5	5	0	20	8	10	6	54

In addition there was one further nest with an unrecorded number of young found in October 1963, and one nest with six young found on an unrecorded date in 1960. This gives a total of 60 young in 12 litters, an average of five per litter. Previously published estimates of average litter size are in close agreement with this. (e.g. Deanesly, 1934, 5 per litter; Morris, 1961, 4.6). The young seen in April are particularly interesting as such early births are quite exceptional.

NESTING

The Hedgehog builds its nest by collecting together a pile of grass and leaves, burrowing in and twirling round and round until the nest material forms a thick layer which completely enwraps the animal. These nests are usually tucked up against a tree or log or hidden in a bramble thicket. In gardens Hedgehogs often nest in piles of leaves, compost heaps and under brushwood intended for a bonfire. The London records also include accounts of Hedgehogs nesting under sheds, planks and corrugated iron. These nests are usually well concealed and are discovered only by accident.

DAYLIGHT ACTIVITY

Hedgehogs are normally regarded as nocturnal creatures and the majority of records (where the time is noted) confirm that live animals are usually seen after dark. Apparently some people are about and sufficiently sober to record Hedgehogs at 3 a.m! There are a few observations of Hedgehogs seen in broad daylight, including one animal that was watched feeding on Christmas Day. Barrett-Hamilton suggests that these animals may be unwell, though it is not clear why a sick Hedgehog should suddenly become diurnal.

MORTALITY

Although natural causes are probably responsible for the greatest mortality, especially among newly weaned young, animals dying of disease or hunger usually hide away and are not commonly found. Predators in the form of Foxes *Vulpes vulpes*, Badgers *Meles meles* and dogs probably account for only a very few. Hedgehogs seem particularly prone to falling into things and although they are good climbers escape is often impossible. In London Hedgehogs are frequently drowned by falling into ornamental ponds and lakes. Hedgehogs are good swimmers, Barrett-Hamilton gives an account of one which swam across the Thames at Marlow, so why should they drown? It could be that having fallen into a pond the animal is unable to climb out, but in many cases this cannot be the reason. Many of the ponds and lakes wherein drowned Hedgehogs have been found have very gently sloping sides up which a Hedgehog could surely climb with ease. Several Hedgehogs died in sewage farm tanks and canals; and one was rescued after it had fallen into a sump hole in a Dulwich road. One animal seen licking sulphuric acid from a car battery in Orpington was courting an even more bizarre death.

Undoubtedly the greatest recorded mortality in London is on the roads. In 1964 over three quarters of all Hedgehog records were of dead animals, mainly road casualties. Large numbers are killed this way every year, often in the same short stretches of road. It would be useful if observers who regularly travel a particular route were to look out for places where squashed Hedgehogs are unusually frequent. In any case road casualty Hedgehogs are easily spotted and identified even from a moving car, and such records when collected by many people can be the source of much interesting information.

ACKNOWLEDGEMENTS

In conclusion I would like to thank the very many people upon whose diligent observations this discourse is based. In particular I wish to thank W. G. Teagle and his successor as Mammal Recorder, John A. Burton, for the care and patience with which they have continued to marshal the records into some semblance of order.

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NOTE: The author is at present engaged in research on Hedgehogs in Britain and would be very pleased to receive or collect live or fresh dead Hedgehogs.

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Survey of Bookham Common

TWENTY-FOURTH YEAR

Progress Report for 1965

GENERAL (C. P. Castell)

Much time and effort have been devoted to the "Hut", erected in December 1964, to render it more in keeping with the somewhat exalted term "Research Centre" bestowed upon it by the Society. Linoleum has been laid and the essential mud-scraper and doormat provided. Furnishing now includes table, chairs, cupboard, notice board and curtains. The comfort of the users is ensured by the electrical wiring of the hut and the provision of fluorescent lighting, table lamp and electric kettle by the Society. An electric convector heater and a table lamp were kindly provided by an anonymous member. Valuable help was given by Mr. R. C. Brown in wiring the hut and obtaining some of the electrical equipment. An outside water-tap has been fitted on the wall of the keeper's cottage nearby and friendly relations established with Mr. E. F. Youngman, the Keeper, who has been most helpful. A list has been drawn up of essential ecological equipment which it is hoped to acquire in 1966. Unfortunately, much of the time devoted to the "hut" has been at the expense of the "research", so that survey output has been restricted.

Mr. L. Manns continued his study of the fauna of the oak-hawthorn leaf litter in Eastern Wood. In the summer, he held a very successful short week-end course on Field Natural History for Teachers on the common, when good use was made of the "Research Centre".

VEGETATION (C. P. Castell)

In Eastern Plain, the distribution of the Aspen (*Populus tremula*) was re-mapped and a hundred yard belt transect across the plain re-surveyed, both for comparison with previous work in 1954 and 1947 respectively. Another area, partly investigated, was the 60 ft. square "Short Grass Quadrat" in Central Plain (map ref. 881), previously surveyed in 1951 and 1956. In 1956, it was noted that there had been a great increase in scrub and a marked change in the percentage cover of the herbs, especially grasses, apparently associated with a reduction of rabbit grazing. There was a remarkable increase of the grasses *Holcus lanatus* and *Arrhenatherum elatius* at the expense of the grasses *Agrostis* spp. and *Festuca* spp. In 1965, the scrub had increased still further and *Holcus* appeared to be the dominant herb. It is hoped to complete the survey in 1966.

INSECTS (C. P. Castell)

The fungus *Collybia peronata* (Bolt. ex Fr.) Kummer occurred in the Eastern Plain transect, referred to above, and Mr. J. B. Evans, who identified the specimens, reported that almost all the spores had been eaten by little beetles, which had previously been observed crawling among the gills. These were determined by Mr. J. Balfour-Browne as *Gyrophæna affinis* Dahlb., one of the Staphylinid beetles, most of which are carnivorous. All the species of *Gyrophæna*, however, are associated with the larger fungi and the adults feed on the spores, but the larvae are not well known.

Another interesting insect was found in July, when Mr. P. Holland and the writer were looking for Myxomycetes in Hollow Wood. What

appeared to be Dipterous larvae were found on the surface of rotten wood under the bark of a decaying log. They were living in tubes apparently made of grass and looking rather like miniature caddis cases. The front part of the larva was free from the tube and appeared to be feeding on the decaying wood. It retreated into the tube when alarmed. The pieces of rotten wood, with the larva, were kept by the writer and several larvae pupated, but only one emerged a month later. The minute fly was determined by Dr. P. Freeman as *Ectrepesthoneura hirta* Winnertz, one of the Mycetophilidae or "Fungus Gnats". It is not a common species and is poorly represented in the British Museum collections. A related species is recorded as making "slimy webs on mouldy branches". The group is difficult to breed out from larvae and little is known of the life histories.

Mr. Parmenter contributes on p. 56 a list of additions to the Diptera fauna made during the last five years. His retirement from the London Area is a great loss to the survey team. He was responsible for the inauguration of the Bookham Common survey in 1941 and has thus completed 25 years of intensive study of the flies of the common, for which more species have been recorded by him than from any other comparable area in the country.

INSECTS—LEPIDOPTERA (G. Beven)

The moths of Bookham Common were listed by Mr. A. S. Wheeler in *Lond. Nat.*, **34**, 28, 1954. In 1965 a mercury vapour lamp was operated from the Society's survey hut by Mr. C. B. Ashby and Dr. G. Beven intermittently between June 19 and November 6. The following species new to the list were recorded by Mr. Ashby:

- 201 – *Arctia villica* L.—Cream-spot Tiger
- 400 – *Leucania comma* L.—Shoulder-striped Wainscot
- 413 – *Arenostola pygma* Haw. (*fulva* Hubn.)—Small Wainscot
- 438 – *Dypterygia scabriuscula* L. (*pinastri* L.)—Bird's-wing
- 488 – *Gortyna micacea* Esp.—Rosy Ear
- 550 – *Brachionycha sphinx* Hufn. (*cassinia* Schiff.)—Common Sprawler
- 555 – *Aporophyla lunula* Stroem (*nigra* Haw.)—Black Rustic
- 574 – *Omphaloscelis lunosa* Haw.—Lunar Underwing
- 578 – *Agrochola lychnidis* Schiff. (*pistacina* F.)—Beaded Chestnut
- 580 – *Anchoscelis litura* L.—Brown-spot Chestnut
- 582 – *Tiliacea citrigo* L.—Orange Sallow
- 583 – *Tiliacea aurago* Schiff.—Barred Sallow
- 584 – *Citria lutea* Stroem. (*flavago* F.)—Pink-barred Sallow
- 631 – *Plusia pulchrina* Haw.—Beautiful Golden Y
- 913 – *Deuteronomos fuscantaria* Steph.—Dusky Thorn

Mr. Wheeler reports two further additions to the list, as follows:

- 441 – *Apamea lithoxylaea* Schiff.—Common Light Arches, one July 13, 1957.
- 478 – *Petilampis minima* Haw. (*arcuosa* Haw.)—Small Dotted Buff, one July 17, 1956.

Mr. Wheeler also reports that certain butterflies seem to have become scarcer at Bookham in the last seven years or so. He has visited the Common at least once in May/June and again in July each year since 1954 (excepting May 1958 and May 1960), and although he considered the weather was suitable for the butterflies on most occasions, he has found

very few of the following species there recently. In parentheses after his remarks is the status as described in the Bookham list 1954.

- 16 – *Pararge megera* L.—Wall Brown. “Not seen since 1956” (1954, common).
- 39 – *Argynnis paphia* L.—Silver-washed Fritillary. “Not seen since 1959”. (1954, common in the woods.)
- 40 – *A. cydippe* L.—High Brown Fritillary. “Not seen since 1959” (1954, common in limited areas, especially near Glade path).
- 42 – *A. aglaia* L.—Dark Green Fritillary. “Not seen since 1958” (1954, established but not so common as nos. 39 and 40).
- 44 – *Clossiana euphrosyne* L.—Large Pearl-bordered Fritillary. “Not seen since 1957” (1954, common especially in areas bordering woods).
- 72 – *Erynnis tages* L.—Dingy Skipper. “Not seen since 1959” (1954, common).

The numbers preceding the names are the reference numbers allocated in Heslop's *Revised Indexed Check List, Ent. Gaz.*: 1959–1963.

BIRDS (G. Beven)

Oakwood (Eastern Wood)

The breeding season census was repeated in 1965 in this 40 acre sample of dense interior oakwood. The numbers of territories of singing males in the years 1963, 1964 and 1965 respectively were as follows: Starling 5, 5½, 10, Chaffinch 5½, 7, 8, Nuthatch 2, 5, 5, Great Tit 12, 17, 17, Blue Tit 19, 19, 22, Coal Tit 2, 5, 4, Marsh Tit, 3, 1, 1, Longtailed Tit 0, 0, 1, Chiffchaff 2, 5, 7, Willow Warbler 2½, 1½, 4, Garden Warbler 2, 2, 4, Blackcap 5, 3, 4, Mistle Thrush 1½, 2, 3, Song Thrush 4, 7, 7, Blackbird 8, 10, 12, Robin 21½, 32, 37, Dunnock 4, 5, 5, and Wren 1, 5½, 11.

From these figures it appears that the Starling is still increasing since it started breeding in the wood in 1962, when there were 2 pairs. The high population of Great and Blue Tits is maintained and the Chiffchaff and Willow Warbler figures are rising. The Wrens are rapidly increasing after being exterminated during the severe winter of 1962-3 and have now returned to the 1962 level (12) but have not yet reached the figure for 1961 (17).

Further study of the figures for the Robin population in the spring, over the years since 1946, reveals a remarkably close relationship with the severity of the previous winter, the numbers decreasing more particularly after prolonged cold spells than low mean monthly temperatures. After a period of continuous frost in January, February or early March lasting about two weeks or more, the Robin population in the following spring was either reduced or remained low in 7 out of 8 years, the exception being 1962 when the cold spell lasted only about 10 days. Conversely, except for a very slight decrease of population in 1948, every decrease followed such a cold spell. Obviously other differences in the severity of the weather may account for some variations but it seems that freezing of the ground or a prolonged covering of snow are vital factors in the control of the numbers of woodland Robins. This survey has already emphasised that relatively few Robins remain inside the wood in January and February, so it is presumably the wintry conditions outside the wood which exert such an important effect on the subsequent Robin population inside the woodland.

The woodland Wren population was also adversely affected by cold spells in the previous winter. Every cold spell of over 2 weeks duration since 1948 was followed by a fall in the number of Wren territories in the ensuing spring (in 4 out of 4 years). But on two occasions out of three, when the cold spell lasted between one and two weeks, the Wrens increased and on two other occasions a fall in population was not associated with cold spells in the previous winter. Wrens do not take so much of their food from the ground, as do Robins in winter, and no doubt there are other important factors in the control of these populations.

Scrub and Grassland

A spring census of the number of territories of singing males was made on 96 acres of scrub and grassland in 1965. Mr. W. D. Melliush reports the following numbers of territories on 61 acres (Western, Isle of Wight and Bayfield plains) during 1963, 1964 and 1965 respectively: Chaffinch 9, 10, 9, Reed Bunting 2, 3, 1, Yellow Hammer 5, 7, 5, Willow Warbler 8, 7, 8, Whitethroat 8, 6, 9, Blackbird 5, 8, 5, Robin 4, 6, 8, Dunnock 7, 5, 7, and Wren 1, 1, 2.

A similar census was also made on Central Plain, a further 35 acres of scrub and grassland. The numbers of singing male territories in 1964 and 1965 respectively were as follows: Chaffinch 8, 4, Reed Bunting 0, 1, Yellow Hammer 2, 2, Willow Warbler 13, 6, Whitethroat 6, 8, Song Thrush 5, 4, Blackbird 7, 3, Robin 17, 15, Dunnock 6, 7½ and Wren 1, 1. A drastic reduction in the numbers of Willow Warblers occurred on Central Plain in 1965. The reason for this seems clear. On March 31, 1965 about 20 acres of this area were blackened by fire, which burnt off all the grass, and a great many shrubs were charred, in one area all the shrubs being at least partly burnt. By May 9 the grass was still not showing much sign of growth in some parts, but subsequently rapidly recovered and so did many of the shrubs. In the burnt area there were no Willow Warbler territories in 1965 where there had been 6 in 1964. No Willow Warblers were even seen in the burnt area until June 13. The numbers of Willow Warbler territories were not reduced on the other 76 acres of scrubland or in the 40 acres of woodland. It seems likely that these birds arriving mainly in early April found no suitable nesting sites in the charred grass, and perhaps also the blackened and leafless twigs of the shrubs discouraged them and they moved elsewhere. On the other hand the Whitethroats, which mainly arrive in mid-April, actually increased their population on Central Plain, even on the burnt area, where in 1965 there were 4 territories, compared with 2 in 1964! Thus the Whitethroats were certainly not discouraged by the blackened grass and damaged shrubs. Perhaps by the time they were settling down to nest, the rank herbage (other than grass) had grown up sufficiently, possibly having been below ground at the time of the fire. Whitethroats build their nests in this herbage or in low bushes and mainly feed in the rank herbage and shrubs. It is not known, however, whether nesting was much delayed and whether they were able to produce a second brood. Chaffinches and Blackbirds seem also to have been adversely affected by the fire. The number of Chaffinch territories in the burnt area in 1965 was 2½ compared with 4 in 1964. Another Chaffinch territory may have been lost in 1965 as a result of clearing of shrubs on about one acre in December, 1964 of an unburnt part of central plain. As regards Blackbirds, there were only 2 territories in the burnt area in 1965 compared with 5 in 1964,

although the above mentioned cleared acre, which was adjacent, might also have been a factor in the loss of one territory. To summarise, therefore, it seems likely that the fire in early spring resulted in the loss of at least 10 territories of 3 species, although a further species may have gained two territories. Casual observation would not have suggested much change in the bird population and such changes can be detected only by detailed census work.

The Tawny Owl *Strix aluco*

From counts made during the nights of September 25 and November 6, it was considered that there were 6 Tawny Owls hooting on or very near the common, and that four were hooting from different parts of the 250 acres of oakwood, giving an average size for autumn territories of about 60 acres. Between 50 and 80 acres is given as the mean size of spring breeding territories in oakwood at Wytham, Oxford (H. N. Southern, R. Vaughan, and R. C. Muir, 1954 *Bird Study*, 1, 107).

Further information derived from pellet examination concerning the vertebrate food of the Tawny Owl in oakwood at Bookham has been summarised (G. Beven, 1965, *Lond. Bird Rep.* for 1965, 29, 56-72). This owl seems to show considerable powers of selection in regard to its food; for instance in woodland it takes mammals (90% of prey units) in preference to birds. There also appears to be some selection in favour of the Field Vole *Microtus agrestis*. This species which usually prefers grassland, comprised as much as 20% of the prey units of the vertebrate food of the owl in the oakwood, whereas of the more typical woodland species the corresponding figures were actually less and were Bank Vole *Clethrionomys glareolus* 17% and Wood Mouse *Apodemus sylvaticus* 18%. Moreover when J. C. Lord investigated the small mammal population in the oakwood, using Longworth traps, he could not trap any Field Voles in the dense wood, but found them only in the relatively narrow grass-covered rides and footpaths, especially if the bordering woodland was fairly open (*Lond. Nat.*, 1961, 40, 73-79). These grassy rides ramify throughout the woodland, but occupy only a relatively small area of the total. Clearly the owls must spend a disproportionate amount of their hunting time in these more open spaces. It seems likely that they have favourite perches at the edge of the rides where they wait to pounce on the Field Voles in addition to the Bank Voles and Wood Mice also present, as these would, no doubt, be more easily caught on open ground.

Further notes on the birds

There was one Woodcock roding on June 19. A Barn Owl was seen by Mr. G. H. Gush near Banks Pond (ref. 458) on August 1. Two pairs of Great Spotted Woodpeckers were present in Eastern Wood during the spring. A small part of each territory was probably outside the wood. In this area there have been 2 pairs annually since 1961. The number of pairs of Longtailed Tits in the breeding season in an area of about 120 acres of grassland with thick scrub and outskirts of oakwood during the year 1961 was 6, 1962 6, 1963 nil, 1964 3 and 1965 4. This species is thus slowly recovering from the disastrous effects of the 1962-3 winter. (The figure of 7-8 pairs for 1961 and 1962 as given in *Lond. Nat.*, 43, 85 and 44, 112 is incorrect and should have read 6 for each year.) There was one pair in Eastern Wood in 1965 for the first year since 1962 when there were 2.

Only one singing male Grasshopper Warbler was heard in 1965. In the recent amendments to the check list of birds of the Common (G. Beven 1963, *Lond. Nat.*, **42**, 98) no mention was made of the occurrence of a Great Grey Shrike *Lanius excubitor* seen on Bookham Common on April 2 1945 by R. W. Hayman (*Lond. Bird Rep.* for 1945, **10**, 7). A male Redbacked Shrike was present on the common in 1965 in the same area as in 1964 from June 6 until June 22 but a hen was not observed. Two territories of Redpolls were again occupied on Western, Isle of Wight, Bayfield and Central Plains. On June 13 a Reed Bunting's nest with 4 eggs was found on the ground under dead bracken on Eastern Plain and the female was still sitting on June 22 (C. P. Castell and L. Manns) This appears to be the first breeding record for Eastern Plain.

MAMMALS (G. Beven)

There is at present no one making any special studies of the mammals, and workers in this field are urgently needed. A fire which burnt off the grass from a large area of Central Plain on March 31 exposed numerous rabbit burrows. These were mostly in the shade of hawthorn trees and were usually shallow, few going deeper than a foot below the surface and mainly running horizontally. This arrangement is presumably necessitated by the relatively high water table here. In Eastern Wood many acorns of both Pedunculate and Turkey oaks were found on the ground below the trees in the autumn, bitten into and partly eaten, often when quite unripe, and much of the food discarded. It was considered that Grey Squirrels were responsible for this destruction and for similar wasteful use of hazel nuts in August, and also for biting off many flowers of wild cherry *Prunus avium* found scattered on the ground in April.

Some Additions to the List of Flies (Diptera) of Bookham Common

By L. PARMENTER, F.R.E.S.

THE survey of the flies of the Common has made further progress. Another list is now given of 149 species and three varieties additional to those already published, making 1,175 species. Even so it cannot be claimed that all species inhabiting the Common have been noted. During the 25 years of the survey there has been much revision of the Diptera by entomologists in Europe as well as in this country. This has resulted in many species being identified which were unknown in Britain in 1941. There is still a lot to be done at Bookham on the flies. Different collecting methods and at hours other than the "official visits" of the Ecology Section would assist in this. The changes in the habitats during the period which will continue as the conservation of the Common is practised must react on the fly fauna. With the increased facilities provided by the hut, perhaps other entomologists will be able to take over and expand the studies initiated.

Thanks are due to Messrs. M. Ackland, C. N. Colyer, J. C. Deeming, E. C. M. d'A. Fonseca, A. E. le Gros and P. Roper who have helped in determining the identity of species in the families on which they have made themselves specialists.

SYSTEMATIC LIST

Additional to the Lists in *London Naturalist*, 29, 1950 and 39, 1960

ORTHORRHAPHA—NEMATOCERA

TIPULIDAE

- Austrolinnophila ochracea* Mg. June, in Central Wood, about the margin of Sheepbell pond and in South East Wood.
- Cheilotrichia cinerascens* Mg. May, about the margin of Isle of Wight pond, in Hill House Wood and South East Wood.
- Epiphragma ocellaris* L. a male in Central Wood, 25 May, 1953.
- Erioptera flavescens* L. July, Eastern Wood.
- E. fuscipennis* Mg. May, about Sheepbell Pond.
- E. lutea* Mg. var. *taenionota* Mg. May, June, in Hill House Wood and Stents Wood East.
- E. trivialis* Mg. April, May, October, generally distributed in marshy areas in Central Wood, near the stream on Central Plain, and at the edges of ponds such as Bayfield, Kelseys, Isle of Wight, Lower Eastern and Manor Ponds.
- Helius flavus* Walk. July, by Lower Eastern Pond.
- Limnophila discicollis* Mg. June, about the pond in South East Wood.
- L. nemoralis* Mg. June, Eastern Plain and Central Wood.
- Limonia chorea* Mg. May, resting in holly tree in Hollow Wood, and found about the ponds, Isle of Wight to Upper Eastern.
- L. mitis* Mg. including vars. *affinis* Schum. and *lutea* Mg. May, June, October in the marsh about the Isle of Wight Pond.
- L. modesta* Mg. June, September to November. Bayfield Plain, Central Plain about the ditch, about fungi in South East Wood and at the edge of Upper Eastern Pond.
- L. sera* Walk. June, in marshy area about the Isle of Wight Pond.
- Molophilus griseus* Mg. May to July, October, November in the damp areas of Bayfield and Eastern Plains and at the margins of Lower and Upper Eastern Ponds and South Eastern Pond.
- M. obscurus* Mg. June, at margin of the ditch on Central Plain.
- Ormosia albitibia* Edw. October, in Eastern Wood.
- O. hederæ* Curt. May and June, at margin of the Isle of Wight Pond, in damp areas about the Isle of Wight ditch and in Hill House Wood.
- O. nodulosa* Macq. May to July, in wooded areas—Central, Eastern and Stents Woods.
- O. pseudosimilis* Lund. June, at the margin of South Eastern Pond.
- Oxydiscus senilis* Hal. June, September, about the margin of Sheepbell Pond and in Central Wood.

TRICHO CERIDAE

- Trichocera annulata* Mg. October to December, in woodland, Central, Hill House and South East Woods, about Upper Eastern Pond and on Eastern Plain, also found on a window at Bookham station.
- T. saltator* Harr. var. *fuscata* Mg. November and December, in South East Wood and on a window of Bookham station.

PTYCHOPTERIDAE

Ptychoptera scutellaris Mg. June, about the margin of Sheepbell Pond.

PSYCHODIDAE

Pericoma exquisita Tonn. June, about the margin of Sheepbell Pond.

P. nubila Mg. April, June, about the margin of Sheepbell Pond.

Psychoda cinerea Banks bred from an unidentified fungus, emerged 17 September, 1951.

CULICIDAE

Aedes annulipes Mg. June and August, in South East Wood and Eastern Hollow, females "attacking". W. Ruttledge and L.P.

Chaoborus crystallinus Deg. April to June, about the Isle of Wight Pond.

C. flavicans Mg. June, about the Isle of Wight Pond.

CHIRONOMIDAE—determined by Mr. P. Roper

Chironomus dorsalis Mg. April, at Isle of Wight Pond.

C. inpar Walk. April, May, Upper Eastern Pond.

C. riparius Mg. May, at Isle of Wight Pond.

C. uncinatus Goet. May, at the gun pits on Eastern Plain.

Cricotopus sylvestris F. April, swept from an area of *Juncus* in the valley of the ponds.

Hydrobaenus piger Goet. A female on 8 January, 1950, at the ditch on Central Plain.

H. rubicundus Mg. April, May, in *Juncus* area about the Isle of Wight Pond.

H. rufiventris Mg. April, in *Juncus* area about the Isle of Wight Pond.

H. turfaceous Kieff. April, May, in *Juncus* area about the Isle of Wight Pond.

Metriocnemus hygroptetricus Kieff. October, November, in swarms over the Isle of Wight ditch and Bayfield Plain.

Pentaneura falcigera Kieff. June, at Isle of Wight Pond.

Tanytarsus brunnipes Zett. March, in swarms over scrub area on Central Plain at the edge of South East Wood.

T. tenellulus Goet. June, at the margin of the Isle of Wight Pond.

CERATOPOGONIDAE

Forcipomyia regulus Winn. April, swept from an area of *Juncus*.

Palpomyia flavipes Mg. June, in damp area of Central Wood.

Schizohalea leucopiza Mg. June, visiting flowers of Greater Stitchwort, *Stellaria holostea* L.

SIMULIDAE

Simulium angustitarse Lund. April, "females attacking" on Central Plain W. Ruttledge, det. L.P.

SCATOPOSIDAE

Aldrovandiella halterata Mg. June, at the margin of Sheepbell Pond.

Scatopse bifilata Walk. A female emerged 5 October, 1951, from the nest of a wasp *Vespula* sp. reared by S. Wakely.

MYCETOPHILIDAE

Acnemia nitidicollis Mg. April, in woodland.

Bolitophila hybrida Mg. reared 17 to 30 September from an unidentified fungus.

Mycetophila guttata Dz. November, Hill House Wood, also reared 15-18 October, 1950 from *Russula nigricans* (Bull.) Fr. det C. P. Castell, from South East Wood.

M. lineola Mg. October and November, in Central, Eastern and Hill House Woods. Also emerged 17 September, 1951 from *Boletus* sp. and on 22 October, 1950 from *Russula nigricans* (Bull.) Fr. det C. P. Castell from South East Wood.

Mycomyia wankowiczii Dz. October, in South East Wood.

Phronia tenuis Winn. November, in South East Wood.

Platyura fasciata Mg. June, at the Margin of Sheepbell Pond.

Rhynchosia fenestralis Mg. November, December, found on the larger fungi on the plains and at the edge of Central Wood.

Sceptonia nigra Mg. February, October, November, in Eastern, Hill House, Hollow and South East Woods. Females found in Grey Squirrel's drey on 13 February, 1949.

Zygomyia humeralis Wied. October, in Eastern Wood.

Z. notata Stann. November, Hill House and South East Woods.

Z. pictipennis Staeg. October to December, on Eastern Plain and in Eastern and South East Woods.

Z. vara Staeg. January, in Hollow Wood.

ORTHORRHAPHA—BRACHYCERA

STRATIOMYIIDAE

Beris morrisii Dale June, in Central Wood.

TABANIDAE

Tabanus autumnalis L. 26 June, 1960 a female in Central Wood. Possibly attracted to the Common by the horses which have become regular visitors due to the increase of horse riding.

EMPIDIDAE

Bicellaria nigrita Collin June, in woodland areas e.g. Central Wood.

B. vana Collin June, September, in Central and South East Woods.

Chelipoda vocatoria Fall. June, at margin of South Eastern Pond.

Crossopalpus minima Mg. May on Central Plain.

Empis nigripes F. June, in Hollow Wood.

E. nigrirarsis Mg. June, in Central Wood.

Euthyneura halidayi Collin May, at the margin of Sheepbell Pond.

Microphorus crassipes Macq. June, at Isle of Wight enclosure, also found on the hut window.

- Rhamphomyia crassirostris* Fall. May, June, about Greenfell ditch and in Stents Wood East.
R. sulcatella Collin May, in wet area of Glade path in Central Wood, also on Banks Plain, Western Plain and in Stents Wood West.
Tachydromia albifacies Collin June in Central Wood.
T. annulipes Mg. June, Stents Wood East.
T. claranda Collin June on Central Plain.
T. cothurnata Macq. May, at edge of the Isle of Wight Pond.
T. minuta Mg. June, on Central Plain.

DOLICHOPODIDAE

- Dolichopus lepidus* Staeg. June, in Central Wood.
Medeterus tristis Zett. May, on tree trunk in Station copse.

PHORIDAE—determined by Mr. C. N. Colyer

- Aneurina urbana* Mg. Female on the bole of an oak in Central Wood, 13 April, 1958.
Megaselia angusta Wood Male in Central Wood, 11 April, 1965.
M. giraudii Egg. Female on 26 June, 1960, in Central Wood.
M. plurispinulosa Zett. Female on 12 June, 1960, in Central Wood.
M. pumila Mg. Male on 11 June, 1961 at the edge of South Eastern Pond.
Phora edentata Schmitz Male on 26 June, 1960 in Central Wood.
P. tincta Schmitz Male on 28 February, 1964 on Eastern Plain.

CYCLORRHAPHA—ASCHIZA

PLATYPEZIDAE

- Microsania pallida* Mg. Males flying in the smoke over the very hot embers of a bonfire made by the Conservation Corps on Bayfield Plain on 10 May, 1964.
Platypeza atra Mg. June, in Central Wood.

PIPUNCULIDAE

- Cephalops obtusinervis* Zett. taken by Mr. G. Waller on 12 June, 1961, det. by Mr. R. L. Coe.
 Two species new to science, a *Cephalops* and a *Eudorylas* found on the Common will be described by Mr. R. L. Coe in his volume for the Royal Entomological Society's Handbook for the "Identification of British Insects" series.

SYRPHIDAE

- Brachyopa insensilis* Collin June, on tree trunk, in Central Wood.
Chrysogaster splendens Mg. September, visiting the flowers of *Angelica sylvestris* L. on Isle of Wight Plain.
Platycheirus scambus Staeg. July, on Bayfield Plain.
P. tarsalis Schum. a female was captured by a male *Empis tessellata* F. on 25 May, 1953 at the edge of Hollow Wood.
Syrphus grossulariae Mg. July, visiting the flowers of Hogweed, *Heracleum sphondylium* L. on Central Plain.
S. laternarius Mueller July, visiting the flowers of Hogweed, *Heracleum sphondylium* L. on the Isle of Wight Plain.
S. lineola Zett. June in Central Wood.
S. umbellatarum F. September, visiting the flowers of Burnet Saxifrage, *Pimpinella saxifraga* L. on the Isle of Wight Plain.

SCHIZOPHORA—ACALYPTERAE

SAPROMYZIDAE

- Lyciella pallidiventris* Fall. June, August, on oak trunks in Central Wood.

PSILIDAE

- Psila obscuritarsis* Lw. June, in Central Wood.
P. rosae F. May, on Central Plain.

SEPSIDAE

- Sepsis orthocnemis* Frey August, visiting the flowers of Wild Parsnip, *Pastinaca sativa* L.
Themira nigricornis Mg. June on Bayfield Plain.

SCIOMYZIDAE

- Sciomyza albocostata* Fall. June, at margin of the Isle of Wight Pond.

CHAMAEMYIIDAE

- Chamaemyia herbarum* R.D. June, on Central Plain.

ANTHOMYZIDAE

- Paranthomyza nitida* Mg. June, in Hollow Wood.

EPHYDRIDAE

- Discocerina plumosa* Fall. June, at the margin of the ponds.
Hyadina nitida Macq. May, at the margin of the ponds.
Hydropota nasturtii Collin July, in Eastern Hollow.
Notiophila annulipes Stenh. June, at the margin of the Isle of Wight Pond.
Parydra nigritarsis Strobl September, at the Isle of Wight Pond.
Trimerina madizans Fall. April, in Eastern Hollow.

SPHAEROCERIDAE

- Chaetopedella scutellaris* Hal. April, in grass tufts by the Isle of Wight Pond.
Limosina clunipes Mg. May, in marsh by the Isle of Wight Pond, det. by Mr. J. C. Deeming.

L. ochripes Mg. April, September, in grass tufts and at the margin of the Isle of Wight Pond.
L. parapusio Dahl a female reared 30 September, 1951 from *Boletus* sp. det. Mr. J. C. Deeming.
L. pullula Zett. April, in grass tuft at the edge of the Isle of Wight Pond, det. Mr. J. C. Deeming.
L. rufilabris Stenh. April, in grass tuft at the edge of the Isle of Wight Pond, det. Mr. J. C. Deeming.
Paracollinella caenosa Rond. March, April, in grass tufts, Bayfield and Eastern Plains and at the edge of the Isle of Wight Pond.
Sphaerocera monilis Hal. May, at edge of Eastern Plain.
Stratioborborus roseri Rond. March, on bleeding birch stump on Eastern Plain.

DIASTATIDAE

Campichaeta obscuripennis Mg. April, September, December, on the leaves of Yew tree and in slit trench at the edge of Eastern Plain.

DROSOPHILIDAE

Drosophila confusa Staeg (= *vibrissina* Duda) June, in Central Wood.
Leucophenga maculata Duf. August, visiting bracket fungus on oak in Central Wood.

AGROMYZIDAE

Melanagromyza angelicae Frost Four males emerged 23 May, 1950 from pupae in the cambium of stem of *Angelica sylvestris* L. on Isle of Wight Plain.

MILICHIIDAE

Desmometopa sordida Fall. a female visiting the flowers of *Angelica sylvestris* L. on the Isle of Wight Plain on 10 September, 1961.

CHLOROPIDAE

Cryptoneura diadema Mg. a male on 10 August, 1952.
Meromyza pratorum Mg. and var. *decora* Frey September, visiting flowers of Burnet Saxifrage, *Pimpinella saxifraga* L. on Isle of Wight Plain.
Oscinella albiseta Mg. June in South East Wood.

CALYPTERAE

TACHINIDAE

Bithia spreta Mg. September, on Central Plain.
Degeeria collaris Fall. August, visiting the flowers of Wild Parsnip, *Pastinaca sativa* L.
Digonochaeta spinipennis Mg. May, in Stents Wood West.
Hebia flavipes R.D. May, Eastern Wood and on Western Plain.
Linnaemyia pudica Rond. August, September, on Central and Isle of Wight Plains, visiting the flowers of Burnet Saxifrage, *Pimpinella saxifraga* L. and of the Wild Parsnip, *Pastinaca sativa* L.
Tachina rustica Mg. July, at the edge of South East Wood.

CALLIPHORIDAE

Melinda anthracina Mg. September, visiting the flowers of Burnet Saxifrage, *Pimpinella saxifraga* L. on the Isle of Wight Plain.
Pollenia vagabunda Mg. Four on oaks and more in the woods near the station and on birches in more open heathy area. A. A. Allen, 1962, *Entomologists Record*, 74, 243.

MUSCIDAE

Acroptena ambigua Fall. August, at the edge of the Isle of Wight Pond.
Coenosia geniculata Fall. August, on Central Plain.
Fannia mutica Zett. June, in Isle of Wight enclosure, a male taken on hut window, det. Mr. E. C. M. d'A. Fonseca.
Hydrotaea similis Meade a female taken on 29 May, 1937 by Mr. H. J. Burkill, det. L.P.
Hylemyza lasciva Zett. April, Kelseys Clearing, at fairly fresh horse dung.
Lispe tentaculata Deg. September, at the edge of the Isle of Wight Pond.
Pegomyia albimargo Pand. a female taken on 9 May, 1965 on Western Plain, det. Mr. M. Ackland.
Phorbia grisea Ringd. among *Molinia* grass tussocks det. Mr. E. C. M. d'A. Fonseca, in A. A. Allen, 1962. *Entomologists Record*, 74, 243.
P. sepia Mg. Males taken on 9 May, 1965 on Western Plain det. Mr. M. Ackland.
A species of *Pegohylemyia* new to science awaits description by Mr. J. E. Collin.

PUPIPARA

HIPPOBOSCIDAE

Ornithomya fringillina Curt. Taken off a dead Wren in 1956 by Dr. G. Beven det. L.P.

Hemiptera-Heteroptera of the London Area

PART III

By ERIC W. GROVES, F.R.E.S.

SOURCES OF RECORDS

Two items given in Part II, pp. 34 and 36 have since been published and should now read as follows:—

47. WARD, P. H., 1965, Some Hemiptera collected by mercury vapour light trap in a Hertfordshire garden. *Ent. Gaz.*, **16**, 163-168.
49. GROVES, E. W., 1965, The Plant Bugs (Hemiptera-Heteroptera) of Ruislip Local Nature Reserve, Middlesex. *Jour. Ruislip N.H.S.*, **14**, 16-30.

The following are new sources of records:—

53. JOHNSON, C. G., 1936, The Biology of *Leptobyrsa rhododendri* Herv. (Hemiptera-Tingitidae), The Rhododendron Lacebug Pt. I, *Annals Apl. Biol.*, **23**, 342-368.
54. Personal records of D. Leston (Middx. and Herts.).
55. WOODROFFE, G. E., 1953, An ecological study of the insects and mites in the nests of certain birds in Britain, *Bull. ent. Res.*, **44** (4), 739-772.
56. Records of the late A. H. G. Alston (probably observed 1947 or 1948) annotated in his copy of Saunders' *Synopsis of the British Hemiptera-Heteroptera* (1875) (see entry 36), now in the present author's possession.

INDEX TO RECORDERS' NAMES

The following should be added to the index of recorders' names already given in Parts I and II:—

H. Britten	(HB)	B. S. Nau	(BSN)
F. A. Dixey	(FAD)	W. E. Phillips	(WEP)
S. Edwards	(SE)	W. A. Sands	(WAS)
W. O. Grant	(WOG)	H. T. Stainton	(HTS)
G. E. Hutchinson	(GEH)	J. Waterston	(JW)
L. J. Winter-Joyner	(LJW-J)	K. P. Whitethorn	(KPW)
I. F. Lansbury	(IFL)	Baron C. de Worms	(CdeW)

BERYTINIDAE (Stilt Bugs)

There are nine British members of this family, of which eight have been recorded in the London area.

Berytinus crassipes (H.-S.) Sp. 135 p. 121
 D&S p. 156 (*Berytus crassipes*) S p. 63 (*Berytus crassipes*)
 B p. 130 (Sp. 66 *Berytus crassipes*)

Occurs usually singly on waste ground particularly cindery waste tips, railway embankments and other dry areas where the grass is sparse and especially if intermingled with the chickweeds *Cerastium holosteoides* and *C. arvense*.

MIDDX. Uxbridge, 6.iv.34, in grass and amongst *Cerastium holosteoides*, *DCT* (33a); Harefield, 14-20.viii.33 and 10.viii.34, and South Harefield, 6.x.34, in grass and amongst *Cerastium holosteoides*, *DCT* (33a).

HERTS. Bushy [probably Bushey is intended], *JAP* (BM); West Hyde, 2.iv.34, hibernating as adult under *Hieracium*, *DCT* (12); and beyond the boundary at Harpenden (Rothamsted Expt. Station grounds), 12.iv.53, *TRES* (1/1953-54, 4).

ESSEX. Wasteland around Tilbury Docks (*Land and Water Bugs*, p.122).

KENT. Bexley Wood, x, *JS* (28) (36) (4) and (22); Swanscombe, *HKK* (22); Otford, *AMM* (22); and Westerham, viii.21, *PH* (BM).

SURREY. Shirley, *GCC* (37) (3); Chipstead, 16.x.10 ♂ and 13.x.18 ♂ and ♀, *ECB* (NM); Headley Lane, *TRB* (37) (3); Mickleham, at roots of *Teucrium scorodonia* and in tuft of grass, *JS* (28) (37); *JAP* (BM); Boxhill, under stones, rare, *WW* (1/1905-06, 93); 12.ix.20 ♀, *ECB* (NM); Weybridge, *JAP* (BM); Egham, 22.vii.54, on *Cerastium*, *GEW* (40 and EMM 90, 213); and beyond the boundary at Gomshall, *EAB* (3); Broadmoor, 26.iii.21 ♂, *ECB* (NM); Abinger, viii.1899, *EAB* (BM); Milford, 8.vii.58, *DL* (SL); and Horsell, *JAP* (BM).

BUCKS. Latimer, 3 and 24.vii.54 and 3.x.53, *WJLeQ* (21); Hedgerley, 21.vii.54, *GEW* (40 and 33d); and at Slough (Upton Court Road waste plot), *GEW* (33d).

Berytinus montivagus (Mey.-Dür)

Sp. 136 p. 122

D&S p. 151 (*Berytus montivagus*) S p. 64 (*Berytus montivagus*)

B p. 129 (Sp. 65 *Berytus montivagus*)

Occasionally found on similar dry and cindery waste ground as the previous species but where its host plant, black medick (*Medicago lupulina*), occurs. Middlesex and Essex records wanting.

HERTS. Boxmoor, 14.viii.33, in clumps of *Bromus*, *DCT* (12).

KENT. Charlton, *D&S* (4), (39) and (22); Southfleet, *AMM* (22); Darenth, 8.vii.50, in chalk cutting amongst grass and *Medicago lupulina* roots, *TRES* (13); Darenth Chalk Pit, *AAA* (22); Swanscombe Chalk Pit, 16.viii.62 (in some numbers) and 4.ix.64, at roots of *Medicago lupulina*, *AAA* (51); and Otford, 4.ii.23, *PH* (BM).

SURREY. Sanderstead, v, in moss, *JWD* (28) and (3); Coulsdon ♂♂ and ♀♀, several dates between 1906 and 1923, *ECB* (NM); Chipstead, i.x.11 ♂, *ECB* (NM); Caterham, *GCC* (3); Buckland Hill, *JAP* (BM); Reigate, *GCC* (3); Mickleham, *GCC* (3); Boxhill, 15.ix.17, *EAB* (BM); Woking, *ES* (3); and beyond the boundary at Wotton, *JAP* (BM); Abinger, viii.1900, *EAB* (BM); Horsley, 1.v.06, *AJC* (HD); Gomshall, *EAB* (3) and Shalford, viii.1886, *EAB* (BM) (3).

BUCKS. Latimer, 3.vii.54, *WJLeQ* (21); Slough (Upton Court Road waste plot), *GEW* (33d); Datchet, 6.viii.52, under *Medicago lupulina*, *GEW* (40 and EMM 89, 230); 29.v.53, *GEW* (SL); and beyond the boundary at Taplow, *GEW* (40 and EMM 88, 255).

Berytinus signoreti (Fieb.)

Sp. 137 p. 122

D&S p. 150 (*Berytus signoreti*) S p. 64 (*Berytus signoreti*)

B p. 128 (Sp. 64 *Berytus signoreti*)

Occasional, occurring in grassland on the chalk (sometimes on the sand) associated with either of its two leguminous host plants, the bird's foot trefoil (*Lotus corniculatus*) and the horseshoe vetch (*Hippocrepis comosa*). Herts. and Essex records wanting.

MIDDX. Harefield, 10.viii.33, in moss, rare, *DCT* (33a); Uxbridge, 2.vi.34, in short grass on railway banks, rare, *DCT* (33a).

HERTS. Beyond the boundary at Tring, 27.iii.34, hibernating in moss, *DCT* (12); and at Royston, 31.v.09 and 1.vi.14, *EAB* (BM) (11).

KENT. West Wickham Wood, iii, *D&S* (28), (37), (4) and (22); Dartford, 18.ix.08 ♂, *ECB* (NM); Westerham, 15.viii.52, *AMM* (SL); and Kemsing, 5.xi.61, *KCS* (14).

SURREY. Croydon, *JAP* (BM); Riddlesdown, *WB* (37); Coulsdon, ♂♂ and ♀♀ on several dates between 1906 and 1918, *ECB* (NM); Chipstead, ♂♂ and ♀♀ on several dates between 1908 and 1916, *ECB* (NM); Caterham, *GCC* (37) and (3); Reigate, *ES* (37) and (3); Buckland Hill, 4.iii.23 ♂, *ECB* (NM); Mickleham, iv and viii, *TRB* (37) and (3); Boxhill, 4.x.08 ♂, *ECB* (NM); 9 and 16.vi.17, *EAB* (BM); 25.vii.52, *DL* (SL); 12.ix.53, *WJLeQ* (21); viii.54, *GEW* (40); 5.v.60, *DL* (HD); Ranmore Common, 27.viii.62, *PSB* (16); Weybridge, *JAP* (BM); and beyond the boundary at Ewhurst, viii.1896, *EAB* (BM) (3); Gomshall, *EAB* (3); Abinger, viii.1899, viii.1900 and 22.v.09, *EAB* (BM); Shere, viii.1892, *EAB* (BM); Hurst Green, viii.1882, *EAB* (BM); and at Cobham, *GCC* (3).

BUCKS. Beyond the boundary at Coombe Hill, 11.vii.54, 6.ix.52 and 3.x.54, *WJLeQ* (21).

Berytinus minor (H.-S.)

Sp. 139 p. 123

D&S p. 157 (*Berytus minor*), p. 158 (*B. commutatus*) and p. 153 (*B. cognatus*)

S p. 65 (*Berytus minor*) B p. 127 (Sp. 63 *Berytus minor*)

The most common species of this genus in the London area. Occurs on the chalk downland, on dry grassy heaths and gravel pits, and may sometimes be taken by sweeping grasses in late May when the females ascend the stems to oviposit. Later the species tends to move to various leguminous plants, especially rest-harrow (*Ononis* spp.), white clover (*Trifolium repens*) and lesser yellow trefoil (*Trifolium dubium*) on which it feeds. Herts. records wanting.

MIDDX. Hammersmith, *JAP* (BM); Ruislip N.R., 15.viii.64, a single adult in short grass on chalk area, *RAPM* (49); Northwood, 21.viii.16, *EAB* (BM).

HERTS. Beyond the boundary at Royston, *EAB* (11).

ESSEX. Walthamstow, v.02, at roots of grass, *CN* (35a).

KENT. Lee (Heather Green Lane), 1900, by sweeping grass, *WW* (1/1900, 76), (4), (39) and (22); Shooters Hill, 1901, *WW* (39); Kidbrook, 1901, *WW* (39); Eltham, *D&S* (28); Plumstead, *D&S* (28); Charlton, *D&S* (28), (4) and (22); *HTS* (39); Blackheath, *AAA* (22); Dartford, *ES* (36); Dartford Brent, viii, amongst thyme and moss, *ES* (36); Birch Wood (near Darenth), *JAP* (BM); Ruxley Gravel Pits, 17.iii.63, *KCS* (14); Park Wood, Swanscombe, 9.v.64, *KCS* (14); West Wickham, *D&S* (22); Otford, ix.20 and 15.iii.24, *PH* (BM); *AMM* (22); Brasted, 11.i.25, i.21 and ix.20, *PH* (BM); Westerham, 13.iii.23, *PH* (BM); Ide Hill, *KCS* (22); and downs N. of Kemsing, 5.xi.61, *KCS* (14) and (22).

SURREY. Wimbledon Common, 28.iii.1830, *Westwood-Hope Brit. Hemipt. coll.* (HD); Wimbledon, *JAP* (BM); Coulsdon, 1.x.16 ♂, 25.xi.06 ♂ and 13.iv.07 ♂, *ECB* (NM); Reigate, *ES* (36); 9.v.20 ♀ and 28.xii.20 ♂, *ECB* (NM); Ashted, 13.i.07 ♀, *ECB* (NM); Ashted Common, 14.ix.47, *TRE* (1/1947-48, 71) and 12.v.51, *TRE* (1/1951-52, 69) (SL); Bookham Common, v, *DL* (34); Mickleham, *D&S* (28); viii.1886, *EAB* (BM);

Boxhill, viii.1891, *EAB* (BM); 24.vi.51, *WJLeQ* (21); Oxshott, 26.iii.1892, *AJC* (HD); and beyond the boundary at Horsell, *JAP* (BM); Woking, *ES* (HD); Ripley, viii.1900, *EAB* (BM); Ewhurst, viii.1889, *EAB* (BM); Gomshall, viii.1892, *EAB* (BM); Farley Heath, viii.1892, *EAB* (BM); Hurst Green, viii.1882, *EAB* (BM); Witley Common, 3.vii.56, *GEW* (HD); and Farnham, *JAP* (BM).

BUCKS. On the boundary at Fulmer, 25.v.53, *WJLeQ* (21); Amer-sham, 3 and 9.v.53, *WJLeQ* (21); Little Chalfont, 31.v.53, *WJLeQ* (21); Latimer, 3.x.53, *WJLeQ* (21); Slough, 7.viii.54, *WJLeQ* (21); (Upton Court Road waste plot), 25.viii.53, *BJS*, and 15.vi.54 ♂, and gravid ♀♀, *GEW* (both records in EMM 90, 175); (ICBFS), 17.v.34, on cabbage plants, *WHG* (41); and beyond the boundary at Coombe Hill, 1.viii.54, *WJLeQ* (21).

Berytinus clavipes (Fab.) Sp. 140 p. 125
D&S p. 154 (*Berytus clavipes*) S p. 64 (*Berytus clavipes*)
B p. 123 (Sp. 62 *Berytus clavipes*)

This uncommon species also occurs on chalk grassland and sandy heaths where it may be found beneath its host plant, rest-harrow (*Ononis repens* and *O. spinosa*). Essex and Herts. records wanting.

MIDDX. Harefield, common (*sic*) on *Ononis*, *DCT* (33a); 13.viii.33, a single ♀ macropter (rare in Britain) taken there also, *DCT* (33a); 16.viii.58, *DL* (SL).

HERTS. Beyond the boundary at Herts. Beacon (Tring), 14.viii.33, *DCT* (12); hibernating at roots of *Ononis*, *DCT* (12); macropterous forms (both sexes) taken there, 26.v.34, *DCT* (12); Royston, 25.v.12 and 1 and 13.iv.14, *EAB* (BM).

KENT. Darenth Wood, 30.v, under leaves, *D&S*, (28), (4) and (22).

SURREY. Wimbledon, *JAP* (BM); Warlingham (Halliloo Valley), 29.viii.64, *KCS* (14); Chipstead, 12.ix.09 ♀, *ECB* (NM); Reigate, *WB* (3); Boxhill, 5.v.60, *DL* (HD); and beyond the boundary at Milford, 8.vi.58, *DL* (SL).

BUCKS. Hedgerley, 17.vii.55, on *Ononis*, *GEW* (40).

Neides tipularis (Linn.) Sp. 141 p. 125
D&S p. 162 S p. 61 B p. 122 (Sp. 61)

Uncommon and local, occurring in dry habitats on heaths, and amongst weeds on agricultural land. Hibernates as an adult beneath leaf litter, twigs and moss. Reported to feed on mouse-eared chickweed (*Cerastium* spp.); sandworts (*Arenaria*, *Moehringia* and *Minuartia* spp.) and various grasses. Middlesex, Herts. and Essex records wanting.

HERTS. Beyond the boundary at Harpenden (Rothamsted Expt. Station grounds), 1953, *TRES* (1/1953-54, 43).

KENT. Shoreham, 17.vi.54, *KCS* (14) and (22); Darenth Chalk Pit, *AMM* (EMM 95, 23).

SURREY. Merton, *EAN* (3); Farthing Downs, 26.x.63, at roots of grass, *EL* (48/Nov. 1963); Kingswood, 28.v.55, *GEW* (40); Reigate, *ES* (37) and (3); Boxhill, *JAP* (BM); 4.x.08 ♂, *ECB* (NM); Mickleham, *GCC* (37) and (3); ix.16, *WJA* (SL); Esher, *JAP* (BM); *GCC* (37) and (3); Oxshott, ix.1900 ♀, *FBJ* (NM); Weybridge, *JAP* (BM); Woking, v. and ix.1888, *ES* (HD), (36) and (3); viii.1875, *EAB* (BM); and beyond the boundary at Horsell Common, *JAP* (BM); 26.iii.05 ♂, *ECB* (NM); Chobham, viii.1874 and viii.1884, *ES* (HD), (3); 21.viii.56, *GEW* (40); Ash Vale,

10.ix.50, a single specimen beneath *Calluna vulgaris*, *DL* (1/1950-51, 80), (SL); Albury, *EAB* (3); Shalford, 17.ix.06, *WOG* (BM); Farley Downs, i.x.33, *PH* (BM); and Camberley, 4.x.25, *EEG* (BM).

BUCKS. Burnham, n.c. (26); Hedgerley, 24.viii.52, *GEW* (40); and Slough, *GEW* (40).

Gampsocoris punctipes (Germ.)

Sp. 142, p. 127

D&S p. 146 (*Metacanthus punctipes*) S p. 65 (*M. punctipes*)

B p. 133 (*M. elegans*)

This bug, rare in the London area, occurs on and beneath its two host plants, the smooth rest-harrow (*Ononis repens*) and the spiny rest-harrow (*Ononis spinosa*). Most of the records are from the chalk downland but a few have been on sandy situations. Essex records wanting.

MIDDX. Harefield, 2.ix.35, abundant on *Ononis*, *DCT* (33a).

HERTS. Chorley Wood, 16.viii.16, *EAB* (BM); and beyond the boundary at Tring Hill and Herts. Beacon, under *Ononis*, 14.viii.33, *DCT* (12); gravid ♀ in cop., 26.v.34, *DCT* (12); and at Hitchin, 17.ix.51, in gravel pit, *GEW* (40).

KENT. Lewisham, 23.vii.93, (HD); Otford, 17.xii.22, *PH* (BM); and Littlestone, 17.ix.55, *GGES* (HD); *DL* (HD).

SURREY. Chipstead, 16.iv.12, *EAB* (BM); 19.viii.50, *DL* (HD); 16.viii.52, *SL* (1/1952-53, 85) and in *SW* coll. (44); 19.v.56, *GEW* (40); Reigate, *ES* (3); S. slope of N. Downs above Pilgrims Way, *WW* (1/1898, 105); Headley Lane, *TRB* (3); Mickleham, *D&S* (3); Boxhill, 25.viii.64 on *Ononis*, *GEW* (40); Ranmore Common, 27.viii.62, *PSB* (16); and beyond the boundary at Shere *EAN* (3); Gomshall, *EAB* (3) and Farley Down, 26.iv.36, *PH* (BM).

BUCKS. On the boundary at Hedgerley, 8.vi.57, *GEW* (40); and beyond at Amersham, 2.ix.51, *WJLeQ* (21).

Metatropis rufescens (H.-S.)

Sp. 143, p. 127

D&S p. 148

S p. 66

B p. 131 (Sp. 67)

Another uncommon bug in the London area, which is confined to a single host, the enchanter's nightshade, *Circaea lutetiana*—a plant although most often in woodland is itself widespread and common throughout the region. Middx., Essex, Herts. and Bucks. records required.

KENT. Shoreham, 17.vi.54, *KCS* (14); Westerham (Tower Wood), 17.vi.51, a single ♀, "this is a late record for what is certainly an overwintered specimen. Eggs were present in the abdomen. Swept from Enchanter's Nightshade", *DL* (1/1951-52, 72) and (22).

SURREY. Headley Lane, 4.ix.37, *AMM* (MM); Boxhill, 29.viii.37 ♂ and ♀ and 26.ix.37 ♂, *ECB* (NM); 2.x.55, *EWG* (24); (Juniper Valley), 16.x.55, *SW* (44); 1.viii.62, *AAA* (51); 27.vi.64, *DC* in *AAA* coll. (51); Norbury Park (Druid's Grove), 6.ix.56, *SW* (44); Ranmore, 15.x.50, beaten from oak, *TRE* (1/1950-51, 82 and 1951-52, 2); Bookham Common, 11.iv.54 ♂, 14.vii.58 adult, 16.viii.53, V and IV instar larvae; 26.ix.58, *EWG* (24); "green larvae found in considerable numbers during June and July", *DL* (34); Arbrook Common, 7.ix.48, *FJC* (SL); and beyond the boundary at Abinger Hammer, in wood on the Downs, viii.1899, *EAB* (BM) and (38, p. 133); Ewhurst, viii.1876, *ES* (HD); 27.viii.1896, *EAB* (BM) and (38, p. 133); Kingsfold, 24.vi.34 ♂, *ECB* (NM); Chiddingfold, 1898, *HStJKD* (HD); and Woking, 30.v.1898, beaten from hawthorn blossom, *GCC* (EMM 34, 209).

BUCKS. Beyond the boundary at Amersham, 10.vii.49, *DL* (SL); and Jordans, 6.viii.50, *DL* (SL).

PIESMIDAE (Beet Bugs)

Two species of a single genus represent this family in Britain; both occur in the London area.

Piesma maculatum (Laporte)

Sp. 144 p. 129

D&S p. 239 (*Zosmerus laportei*) and p. 240 (*Z. capitatus*)

S p. 122 (*P. capitata*) B p. 197 (Sp. 137, *P. maculata*)

This species, the more frequent of the two London Piesmids, is usually taken by sweeping during summer months on various plants of the *Chenopodiaceae* family. In winter it hibernates in moss or at the bases of plants.

MIDDX. Hampstead, 9.x.1900 ♂, *ECB* (NM); Hounslow Heath, 27.vii.53, *DL* (SL).

HERTS. Along the Colne Valley from West Hyde to Watford, 14.ix.34, common under hedges on dry banks in moss, *DCT* (12); lays eggs in June on dry stalks; food plant, *Chenopodium album*, *DCT* (12); Bushey, 25.vii.43, *CHA* (17); Wormley Wood, 31.viii.41, *HWJ* (43); and beyond the boundary at Harpenden, 3.iii.37, *DCT* (12); Royston, 16.v.10, *EAB* (BM); and at Royston Heath, 13.iv.21, *GEH* (BM).

ESSEX. Walthamstow (Hale End), 17.v.24, on blanket drying in a garden! *CN* (34a); Benfleet, 17.v.19, *EAB* (BM); and beyond the boundary at Writtle, viii.53, *JHF* (42).

KENT. Blackheath (Shooters Hill), *WW* (39); Lee, iv, *D&S* (28), (4) and (22); *JAP* (BM); Kidbrook *WW* (39); Foots Cray, vi, *D&S* (28); Bromley, vi.1886, *ES* (HD); Bickley, vi, *D&S* (28), (4) and (22); Darenth Wood, *JAP* (BM); *AMM* (22); 23.xii.55, *KCS* (14); 6.v.60, *AAA* (51); (Birch Wood) *JAP* (BM); Fawkham, 28.ii.56, *KCS* (14) and (22); Shoreham, 19.vi.60, *KCS* (14) and (22); Otford, *AMM* (22); Westerham, 22.xi.20, *PH* (BM); and on the boundary at Gravesend, 6.vi.31 ♀, *ECB* (NM).

SURREY. Chipstead, 12.ix.09 ♀ and 8.ii.20 ♀, *ECB* (NM); Buckland, 4.iii.23 ♀, *ECB* (NM); Buckland Hill, 7.v.05 ♀, *ECB* (NM); Ashted, 19.iv.07 ♀, *ECB* (NM); Bookham Common, 9.ix.51, *DL* (SL) and (34); 13.v.56 and 14.vi.53 ♀, *EWG* (24); Esher Common, *JAP* (BM); and beyond the boundary at Woking, v.1888, *ES* (HD); Chobham, vii.1874, *ES* (HD); Abinger, viii.1899, *EAB* (BM); Abinger Hammer, 11.v.12, *EAB* (BM); and Shere, viii.1896, *EAB* (BM).

BUCKS. On the boundary at Slough (PILG), various dates, in litter, *GEW* (40); and beyond at Little Chalfont, 15.v.52, *WJLeQ* (21); Amersham, 9.v.53, 14.ix.52 and 23.ix.51 (in spruce cone), *WJLeQ* (21); Common Wood, 10.ix.50, *WJLeQ* (21) and Ivinghoe Beacon, 2.vi.51, *WJLeQ* (21).

Piesma quadratum (Fieb.)

Sp. 145, p. 129

D&S p. 238 (*Zosmerus quadratus*) S p. 121 (*P. quadrata*)

B p. 196 (Sp. 136)

Apart from a few inland localities this species occurs only on the few remaining Thames-side salt marshes in the London areas of N. Kent and S. Essex. It is associated with various plants of the family *Chenopodiaceae*.

MIDDX. Cripplegate, City of London, 28.vii.56, numbers of ♂♂ and ♀♀ swept from *Chenopodium album* growing on a bombed basement and

site, *EWG* (25); Hounslow Heath, 5.x.52, two specimens found beneath *Artemisia* on an ash and rubble tip, *GEW* (33b); 5.v.53, *GEW* (EMM 89, 248); 13.ix.57, *GEW* (HD); 27.vii.53, *DL* (SL); Ruislip N.R., 19.vi.58, a single adult swept from area where *Rumex acetosella* and *Galium aparine* grew, *EWG* (49); Harefield, 8.viii.54, a single adult swept from marshy habitat, *WJLeQ* (21).

ESSEX. South Benfleet, 16.vii.33, on *Beta maritima* and other plants, *KGB* (1/1933-34, 25); Benfleet, 18.v.26, *AEG* (MM).

KENT. Plumstead Marsh, 1900 *WW* (39); 9.ix.95, *AJC* (HD); Plumstead, (sand and gravel pit), ix-x.57, amongst *Atriplex patula* and one at roots of *Rumex acetosella*, *AAA* (EMM, 95, 96); Abbey Wood marshes, 24.vii.54 and 31.viii.55, *EWG* (24); Dartford marshes, 22.iv.57, *KCS* (14) and (22).

BUCKS. Slough (PILG), 15.iii.51 *GEW* (40) and (EMM 89, 248); 11.v.53, *BJS* (EMM 89, 248).

TINGIDAE (Lace Bugs)

This family has 22 representatives in this country of which 18 species are recorded from the London area.

Campylosteira verna (Fall.)

Sp. 146, p. 141

D&S p. 258 and 259 (*C. brachycera*)

S p. 124

B p. 200 (Sp. 139)

Most of the records for this species are from localities on the chalk which it favours, being found there beneath moss. Although it is not common in the London area, it may be taken in every month of the year except July. Herts. records wanting.

MIDDX. Hampstead, *GCC* (37).

HERTS. Beyond the boundary at Royston, 26.v.17, *EAB* (BM) and (11).

ESSEX. Epping Forest, vi.50, in leaf mould, *RDW* (SL) and (EMM 89, 303).

KENT. Darenth Chalk Pit, 10.ix.60, on a slope with very short moss, *AAA* (51); 9.x.63, several under stones on almost bare chalk with practically no moss visible, *AAA* (51); Otford, 15.iii.24, 8.iv.23 and 17.xii.22, *PH* (BM); 15.iii.24, n.c. (but probably *PH*) (HD); 16.viii.25 ♂, *ECB* (NM); *AMM* (22); Westerham, 21.iv.23, *PH* (BM).

SURREY. Coulsdon, 13.iv.06 ♀, *ECB* (NM); 24.iii.07, *ECB* in *EAB* coll. (BM); Caterham, *GCC* (37) and (3); Sanderstead, iii, plentiful in moss on sunny slope, *D&S* (28); Reigate, *ES* (37) and (3); (Redstone Hill), in sandpit, *J&TL* (32); Walton Heath, 24.iii.07 ♂ and ♀, *ECB* (NM); Buckland Hill, *JAP* (BM); 4.ii.23 ♀, *ECB* (NM); Boxhill, 21.iii.20 ♀, *ECB* (NM); Mickleham, ix, *D&S* (28); *GCC* (3); Bookham Common (old record not confirmed), (34); Oxshott, *TRB* (37) and (3); and beyond the boundary at Weybridge, *CWD* (37) and (3).

BUCKS. On the boundary at Little Chalfont, 4.iv.54, *WJLeQ* (21); and beyond at Wendover, 19.viii.15, *EAB* (BM).

Acalypta brunnea (Germ.)

Sp. 147, p. 142

D&S p. 260 (*Orthostira concinna*) S p. 126 (*O. brunnea*)

B p. 201 (Sp. 140)

A rare species occurring in moss at the base of tree trunks. There have been no records for it in the London area since the turn of the century.

KENT. Darenth Wood, *D&S* (28), (36), (37), (4) and (22); *JAP* (BM); Bickley, *FBJ* (4).

SURREY. Redhill, *J&TL* (36), (37) and (3); Horsley, *TRB* (3); and beyond the boundary at Abinger, ix.1900, *EAB* (BM); Gomshall, *EAB* (3); Peaslake, viii.1892, *EAB* (BM); and Ewhurst, vii.1896, *EAB* (BM).

Acalypta carinata (Panz.) Sp. 148, p. 142

D&S p. 262 (*Orthostira cervina*) S p. 126 (*O. cervina*)

B p. 202 (Sp. 141, *Acalypta cervina*)

Another rare bug also found in moss especially that on fallen rotting logs. No records for the London area in the last 30 years.

MIDDX. Harefield, 12.ix.34, three specimens in moss and *Luzula* in chalk pit, *DCT* (33a).

KENT. Otford, 9.x.20, *PH* (BM); 21.v.22 ♂, *ECB* (NM); viii.22, *PH* (BM); 6.vi.25 ♂ and ♀, 13.vi.25 ♀ and 28.vi.25 ♀, *ECB* (NM); 28.vi.25, *ECB* ex *JJC* coll. (HD); 19.vii.25, *ECB* ex *JJC* coll. (HD); Brasted, 8.v.23, *PH* (BM) and (HD); 20.v.22, *PH* (HD); 29.vi.22, *PH* (BM).

SURREY. Coombe Hurst, Croydon, v, in moss on a bank under bushes, *D&S* (28) and (37); Shirley, *GCC* (37) and (3); Caterham, *GCC* (37) and (3); Reigate, *WB* (37) and (3); Buckland Hill, 12.v.07 ♂, *ECB* (NM); and beyond the boundary at Gomshall, viii.1892, *EAB* (BM) and (3).

Acalypta parvula (Fall.) Sp. 151, p. 144

D&S p. 263 (*Orthostira obscura*) S p. 127 (*O. parvula*)

B p. 204 (Sp. 144)

The most common species of this genus has been taken on a number of occasions in the London area. Occurs in moss and at roots of grass usually in dry situations both on the chalk downs and on sandy heaths. Essex records wanting.

MIDDX. Uxbridge, 1.x.34, common in moss and at roots of grass, *DCT* (33a); Harefield, 11.iv.34, common in moss and at roots of grass, *DCT* (33a).

HERTS. Bushey, *JAP* (BM); Aldenham, 17.viii.52, common in short moss on cindery-clay substrate, *DL* (EMM 89, 132); and beyond the boundary at Letchworth, 11.iv.14, *EAB* (BM); and Royston, 26.v.17, *EAB* (BM) and (11).

KENT. Erith Marshes, 16.x.59, one on pathway under *Achillea*, with short dry moss, *AAA* (51) and (22); Farningham Wood, 29.ix.63, *KCS* (14); Swanscombe, 4.ix.64, in chalk pit taken by grubbing, *AAA* (51); Plumstead, 1898, *WW* (39); Dartford, 18.ix.08 ♀, *ECB* (NM); Bickley, *FBJ* (22); Otford, ii.20, ix.21, 11.ix.21 and 2.x.21, *PH* (BM); 17.xii.22, *PH* (BM) and (HD); 16.viii.25 ♀, *ECB* (NM); Westerham, 19.iii.21, *PH* (HD); 23.ii.21, ii.22; and 16.xii.34, *PH* (BM).

SURREY. Richmond Park, 11.ix.21, *HStJKD* (HD); Shirley, 10.iv.-1892, *AJC* (HD); Chipstead, 12.ix.09 ♂ and ♀, 22.ix.09 ♀, and 24.ix.10 ♀, *ECB* (NM); Walton Heath, 24.iii.07 ♂ and ♀, *ECB* (BM); Reigate (Redstone Hill), in sand pit, *J&TL* (36); Mickleham, *JAP* (BM); Oxshott Heath, 24.viii.52, *DL* (SL); Esher Common, 28.vii.57, *DL* (SL); Weybridge, *JAP* (BM); and beyond the boundary at Abinger, viii.1900, *EAB* (BM); Ewhurst, iv.06, *EAB* (BM); Leith Hill, viii.1895, *EAB* (BM); Farley Heath (S. of Albury), 31.vii.29 ♀, *ECB* (NM); and Chiddingfold, 23.iii.03 and 2.iv.08, *HStJKD* (HD).

BUCKS. Iver, 4.vi.53, *GEW* (40); Slough (Upton Court Road waste plot), 1953-54, *GEW* (33d); and beyond the boundary at Little Chalfont, 4.iv.54, *WJLeQ* (21); Hyde Heath, 8.iii.53, *WJLeQ* (21); Coombe Hill, 6.ix.52 and 22.ix.51, *WJLeQ* (21); and Longdown Hill, 18.x.57, n.c. (HD).

Dictyonota strichnocera (Fieb.)

Sp. 152, p. 145

D&S p. 256

S p. 129

B p. 206 (Sp. 146)

This local bug occurs on both species of gorse (*Ulex europaeus* and *U. minor*) and also on broom (*Sarothamnus scoparius*). The adults may be taken on the host plants from late July until September.

MIDDX. Hampstead Heath, vii.1833, *Westwood Hope* coll. (HD); Edgware (Scratch Wood), 30.vii.44, *CHA* (17); Hounslow Heath, 1952, a few at the base of broom on the Heath, *GEW* (33b).

HERTS. Rickmansworth, 1.ix.34, *DCT* (12); Barnet, viii.1885, *EAB* (BM); St. Albans (No man's Land), 31.vii.24, *PH* (BM); on the boundary at Chorley Wood, 10.viii.16, *EAB* (BM); and beyond at Harpenden, vii.24, *PH* (BM); 1.viii.54, *GGES* (HD).

ESSEX. Epping Forest (Strawberry Hill), on furze, *CN* (35a); (Chingford), 15.vii.11, *EAB* (BM); 13.vii.12, *EAB* (BM); and beyond the boundary at Danbury Common, 30.vii.60, *JHF* (42).

KENT. Blackheath, 1900, *WW* (39) and (4); (Maze Hill); 25.viii.62, on an old gorse bush in gravel pit, *AAA* (51) and (22); Dartford Brent, viii, *D&S* (28), (4) and (22); Westerham, *AAA* (22); and beyond the boundary at Ryarsh, *AMM* (22).

SURREY. Wimbledon Common, viii.1833, *Westwood Hope* coll. (HD); Tooting Bec, 10.vii.24, larvae, *EAB* (BM); Oxshott Heath, 28.vii.51, *DL* (SL); 11.viii.53, *DL* (SL); ix.03, on broom *WW* (1/1903, 60); Ashted Common, 20.vii.46, on gorse, *FJC* (1/1946-47, 74); Reigate District, in moss, *J&TL* (32); Bookham Common, viii, on dwarf gorse (*Ulex minor*) of Eastern Plain, *DL* (34); Weybridge, *JAP* (BM); and beyond the boundary at Woking, vii.1890, viii.1882 and ix.1882, *ES* (HD); Chobham, viii.1833, *Westwood Hope* coll. (HD); vi.1880 and viii.1884, *ES* (HD); 22.vii.33 ♂, *ECB* (NM); 26.vii.34, *AMM* in *EWG* coll. (24); 23.ix.56, on gorse, *GEW* (40); Horsell *JAP* (BM); 27.viii.32 ♀ (NM); Virginia Water, 2.viii.58, *GEW* (40); Byfleet 8 and 9.vii.50, *DL* (SL); and Shere, viii.1892, *EAB* (BM).

BUCKS. Beyond the boundary at Stoke Common, 18.vii.53, *WJLeQ* (21); Chalfont St. Peter, 14.vii.25, *EAB* (BM); and Burnham Beeches, 22.vi.12, *EAB* (BM).

Dictyonota fuliginosa (Costa)

Sp. 153, p. 145

S p. 129 (*D. fieberi*)

B p. 207 (Sp. 147)

This uncommon species is associated with broom particularly the older bushes bearing abundant seed-pods. Herts, Essex and Bucks. records required.

MIDDX. Hounslow Heath, 26.vii.53, *DL* (SL); Hillingdon, 8.viii.36, a few on *Sarothamnus scoparius*, *DCT* (33a).

KENT. Plumstead, on broom, *WW* (1/1897, 141); (Wickham Lane), 1894, *WW* (39) (probably the same as the previous record).

SURREY. Oxshott Heath, ix.03, on broom, rare, *WW* (1/1903, 60); Weybridge, *JAP* (BM) and (3); (36) and (37); and beyond the boundary at Woking, *GCC* (BM); *GCC* ex *JCC* coll. (HD); *JE* (3); 13.viii.04, *ES* (HD); viii.28, *JCC* coll. (HD); 31.vii.58, *GEW* (40); Chobham, 28.vii.34,

ECB (BM); 28.vii.34 ♂ and ♀, *ECB* (NM); 25.vii.38, *AMM* (SL); 31.vii.58, *GEW* (40); Virginia Water, 7.vii.56 on *Sarothamnus scoparius*, *GEW* (40); and Byfleet, 8.ix.13, *EAB* (BM).

Dictyonota tricornis (Schrank)

Sp. 154, p. 145

D&S p. 255 (*D. crassicornis*) S p. 128 (*D. crassicornis*)

B p. 205 (Sp. 145)

Another uncommon species of this genus, usually occurring singly, in dry situations on chalk downland, in sand and chalk pits, or on light soil. Although when found this bug is always associated with low-growing vegetation the actual host plant still remains unknown. Essex records wanting.

MIDDX. South Harefield, vii.34, a few under dead *Rumex* leaves in a sandpit, *DCT* (33a).

HERTS. Rickmansworth, 28.viii.16, *EAB* (BM); Bricket Wood, ix.19, *HD* in *EAB* coll. (BM); and beyond the boundary at Wymondley, *EAB* (11).

KENT. Blackheath (near Maze Hill), 19.ix.63, a single specimen at roots of short mixed herbage in gravel pit, *AAA* (51); Plumstead, vii-ix, *D&S* (28), (39), (4) and (22); Eltham, vii-ix, *D&S* (28), (39), (4) and (22); Lewisham 6.vi.93, *AJC* (HD); Otford, x.21, *PH* (BM); *AMM* (22); Westerham, vii.22, and ix.21, *PH* (BM); Darenth (Chalk Pit), *AMM* (22).

SURREY. Purley, *JAP* (BM); Chipstead, 16.vii.11 ♂ and ♀, *ECB* (NM); Merstham (Lord's Wood), 3.viii.1898, *WJA* (SL); Oxted, 11.vi.1893, *AJC* (MD); Mickleham, *JAP* (BM); viii.15, *WJA* (SL); Boxhill, 5.viii.56, *GEW* (40); Oxshott Heath, *AB* in *AJC* coll. (HD); and beyond the boundary at Abinger, 8.viii.56, *GEW* (40); Gomshall, viii.1892, *EAB* (BM); and Ewhurst, viii.1896, *EAB* (BM).

BUCKS. Datchet, vii.53, in gravel pit, *BPM* (EMM 90, 40); vii.54, *GEW* (40); and on the boundary at Hedgerley, 22.vii.54, *GEW* (40).

Derephysia foliacea (Fall.)

Sp. 155, p. 146

D&S p. 254

S p. 130

B p. 208 (Sp. 148)

Though locally distributed this lace-bug is sometimes found in numbers in autumn on well-established clusters of ivy that bear flowers. The adults overwinter on the ground in moss. Essex records wanting.

MIDDX. Crouch End, vii.11, *EAB* (BM); London N.W.8. (St. John's Wood), 31.vii.60, on ivy, *DL* (HD); 11.viii.60, *DL* (HD); Finchley, 3.vii.46, *CHA* (17).

HERTS. Barnet, viii.1885, *EAB* (BM); West Hyde, 14.ix.34, larva in moss, and 7.ix.35, adults at roots of grass, *DCT* (12); on the boundary at Bovingdon, 7.iii.36, *DCT* (12); and beyond Harpenden, 19.ix.37, *DCT* (12); "nymphs will feed on *Hedera* but I have frequently found the imago far removed from this plant" *DCT* (12); Wymondley, *EAB* (11).

ESSEX. Beyond the boundary at Stanford-le-Hope, 5.viii.62, *PJLR* (MM); and at Widford, 28.vii.60, *JHF* (42).

KENT. Plumstead, 24.i.1895, *AJC* (HD); Blackheath, 1900, beaten from ivy, *WW* (1/1900, 85), (4), (39) and (22); (Kidbrook Lodge) n.c., *WW* (1/1900, 95); (garden at 63 Blackheath Park), "hibernates in ivy on garden wall and can be beaten out in autumn, winter and spring but not commonly. In summer more often at large singly: 7.viii.58, flying and settling on hawthorn leaf; 20.vii.64, by sweeping; 26.viii.63 and 14.ix.62, on housewall; 17.viii.57 and 17.x.54 in grass litter, etc.; 16.viii.64 from

ivy; and 20.vii.60, six ♂♂ off ivy, all records of *AAA* (51) and (22); Lewisham, *JAP* (BM); Dartford, 25.viii.06 ♀, *ECB* (NM); Darenth (Birch Wood), *JAP* (BM); Swanscombe, *HKK* (22); Bickley, *FBJ* (4) and (22); Eynsford, 15.viii.37, *SL* (1/1937-38, 50); Otford, viii.18 and 20.viii.22, *PH* (BM); 2.viii.26 ♂ and ♀ and 6.ix.24 ♂, *ECB* (NM); and Brasted, 1920, *PH* (BM).

SURREY. Carshalton, n.d., in ivy, *DC* in *AAA* coll. (51); Shirley, *JAP* (BM); Coulsdon, 9.viii.08 ♂; Chipstead, 23.vii.11 ♀ and 14.viii.10 ♂, *ECB* (NM); Reigate district, in moss, *J&TL* (32); Mickleham, viii, abundant in ivy growing on palings, *D&S* (28) and (36); Boxhill, 10.x.1891, *AJC* (HD); 2.vii.11 ♂, *ECB* (NM); Bookham Common, ix, *DL* (34); Horsley, viii.1896, *WJA* (SL); Esher, *JAP* (BM); Weybridge, *JAP* (BM); and beyond the boundary at Cb (= Chobham), viii.1833, *Westwood Hope* coll. (HD); along the Basingstoke Canal between Pirbright Bridge and Frimley Green, 1954-5, *HDS* (50); and Shalford, viii.1886, *EAB* (BM).

BUCKS. Slough (PILG), viii.55 on ivy, *GEW* (40); viii.64, *GEW* (40).

Stephanitis rhododendri (Horv.)

Sp. 156, p. 146

Now world wide in distribution; this lacebug is thought may have originally come from America where it is indigenous. It is more than likely, however, that its first introduction to this country has been fortified since with the arrival of numbers in consignments of cultivated rhododendrons from the Continent which may have been infested at the time they were imported. The damage done by the bug is caused through its feeding on the leaves which produces a mottling of the upper surface and a chocolate-coloured spotting below. The bug has now spread to *Rhododendron ponticum* growing in the wild state in quite a few localities in the south.

MIDDX. Fulham, n.d., n.c. (Zoologist, 1910, 395); West Ealing, 10.viii.27, *LJW-J* (BM); Enfield (53); Hampstead Heath, n.d., *DL* in *WJLeQ* coll. (21); Hounslow Heath, 14.vii.51 and 1.viii.50, n.c. (SL).

HERTS. St. Albans (53); and beyond the boundary at Ashridge, vii.36, abundant on *Rhododendron*, *DCT* (12).

ESSEX. Romford (53); Loughton (53); and Gidea Park (53).

KENT. Blackheath (Garden at 63, Blackheath Park), 20.vii.60 "one specimen off *Pyrus* in my garden where there is no rhododendron"; 17.viii.64, "several on underside of rhododendron leaves in next garden", *AAA* (51) and (22); and beyond the boundary at Paddock Wood, 6.vii.29, larvae, *BSW* (NM).

SURREY. Kingston upon Thames, 1901, n.c. (53) (First record for Britain); Kew (53); Surbiton (53); Shirley, viii.54, *HB* (EMM 91, vii); Limpsfield (53); Weybridge, 28.vii.37, *Ellis* in *PH* coll. (BM); 28.vii.37, n.c. (SL); and beyond the boundary at Woking, vii.54, in a nursery, *GEW* (40); (53); Camberley, vi and vii, larvae, and 28.vii.16 adults, *EEG* (EMM 52, 207); 1919, *EEG* (1/1919-20, 82); xi.22, *EEG* (BM); (53); Sunningdale (53); and Wisley (53).

BUCKS. Slough (53); and beyond the boundary at Little Chalfont, 21.viii.56, *WJLeQ* (21) and (HD).

Tingis reticulata (H.-S.)

Sp. 158, p. 148

D&S p. 250 (*Monanthia reticulata*) S p. 133 (*M. ciliata*)

B p. 212 (Sp. 152, *M. ciliata*)

Rare in the London area, this Tingid seems to be confined to chalk

districts where it occurs on its host plant bugle (*Ajuga reptans*) although a few records give it on black mullein (*Verbascum nigrum*). There are as yet no records for Middx., Herts., Essex and Bucks.

KENT. Otford, 6.v.23, *PH* (BM) and (HD); 25.xi.22, *PH* (HD); Brasted, viii.20, *PH* (BM) (HD) and (22).

SURREY. Chipstead, 19.v.56 on *Ajuga*, *GEW* (40); Boxhill, 16.ix.17, (on the underside of the dried-up leaves of *Verbascum*, Butler's *Biology*, p. 212), *ECB* in *EAB* coll. (BM); 16.ix.17 ♂♂ and ♀♀, *ECB* (NM); 7.vi.25, *WEC* (BM); 23.vii.32 on *Verbascum nigrum*, *SL* (1/1932-33, 91); 5.viii.1900, *FBJ* (EMM 39, 69); 24.vi.51, *DL* (1/1951-52, xvi) and in *WJLeQ* coll. (21); 25.iv.53, *DL* (SL); (Happy Valley), 2.x.49, *DL* (SL) and in *WJLeQ* coll. (21); near Dorking, viii.1900, *FBJ* (1/1900, 88).

BUCKS. Beyond the boundary at Amersham, 10.vi.51, *WJLeQ* (21).

Tingis ampliata (H.-S.)

Sp. 159, p. 148

D&S p. 252 (*Monanthia ampliata*) S p. 132 (*M. ampliata*)

B p. 209 (Sp. 149, *M. ampliata*)

Probably the most common lacebug in the London area, being found on almost every large patch of creeping thistle (*Cirsium arvense*) occurring on waste ground, commons and heaths, or as a weed on cultivated land. It lays eggs on the stems, the larvae feed on the buds and leaves, and the adults hibernate throughout winter in moss at root bases or in litter nearby.

MIDDX. Cripplegate bombed sites, City of London, 18.vi.55, *EWG* (25); Golders Hill, Hampstead Road, 4.vi.50, *DL* (SL); Palmer's Green, Southgate, 29.x.18, *EAB* (BM); Hampstead Heath, 1949, *DL* (1/1949-50, 36-38); 8.vi.50, clearing on sandy heath, *DL* (SL); Finchley, 16.v.43, *CHA* (17); Mill Hill, 19.ii.39, n.c. (SL); Scratch Wood, N. of Edgware, 23.vii.60, *DL* (HD); Northwood, 13.iii.43, *PJLR* (20); Ruislip L.N.R., many records between late June-mid-Sept., 1952-58, *EWG* (49); Harefield, 23.x.43, *PJLR* (20); Uxbridge, 28.v.26, *JW* (BM); and Hounslow Heath, *GEW* (40).

HERTS. Bricket Wood Common, 3.vii.56, *EWG* (24); Chorley Wood, 26.v.57, *WJLeQ* (21); and beyond the boundary at Harpenden, 15.vii.54, 22.viii.54 and 3.ix.54, *GGES* (HD); Rothamsted Expt. Station grounds, 21.iv.53, *TRES* (1/1953-54, 4); and Royston, 26.v.17, *EAB* (BM) and (11). (Obviously more common than these available records indicate—E.W.G.).

ESSEX. Epping Forest, iv.1900, *EAB* (BM); 7.x.62, *PSB* (16); (Chingford), 15.vi.12, *EAB* (BM) and (38); 6.vii.02 ♂, *ECB* (NM); (Fairmead), n.d., on thistles, *CN* (35a); (Loughton), 10.ix.10, *EAB* (BM); 30.vii.50, *DL* (SL); Walthamstow (Hale End), 17.v.24, on blanket drying in garden, *CN* (35a); Woodford, 26.viii.25, adults, and larvae of all instars I-V, *EAB* (BM); and beyond the boundary at Writtle, viii.53, *JHF* (42), and Chelmsford, 31.vii.60, *JHF* (42).

KENT. Charlton, 9.ix.58 and 3.vii.60, *AAA* (51) and (22); Plumstead, 20.ix.57, a single nymph, *AAA* (51); Blackheath, 2.vii.58, 7.vii.58, 16.vi.59, 7.v.60 and 9.v.60, occurring singly, all taken by sweeping *AAA* (51); 21.iii.59, 14.iii.59, 28.ii.59, 15.iii.61 (adult and larva) all found in grass litter, *AAA* (51); 14.v.1894, *AJC* (HD); Lewisham, 15.v.1893, *AJC* (HD); n.d., *WW* 1/1900, 78); Lee, ii and iv, *D&S* (28), (37), (4) and (22); Kidbrook, *WW* (4) and (22); 3.ix.1895, *AJC* (HD); Abbey Wood Marshes, *AAA* (22); 24.vii.54 and 31.viii.55, *EWG* (24); Darenth Wood, n.d., *FPP* (HD); n.d., *ECB* (22); 6.vii.55, *EWG* (24); Chislehurst, v, *D&S* (28), (37), (4) and (22); Otford, *AAA* (22); Shoreham, 14.v.60 and 19.vi.60,

KCS (14); Eynsford (Beechen Wood), 22.ii.64, KCS (14); Horton Kirby, 25.v.63, KCS (14); and just beyond the boundary at Gravesend, 3.iv.14 ♂ and ♀, ECB (14) and (22).

SURREY. Wimbledon, ES (37) and (3); Addington, 6.x.62, SL (1/1962, 104); Banstead Downs, 12.vii.58, 23.vii.61 and other dates, AAA (51); Reigate, ES (37) and (3); Reigate district, J&TL (36); Epsom Common, 6.ix.53, adult and V instar larva, EWG (24); Ashted Common, 24.v.47, common, FJC (1/1947-48, 62); Bookham Common, 9.vi.34, common, FJC (1/1934-35, 19); 29.vii.50, DL (1/1950-51, 76); 5.viii.50 and 15.viii.53, DL (SL); 4.v.52, DL (54); numerous dates between 1953-58 (earliest of the year 11.v; the latest 8.xi), V and IV instar larvae taken in vii, viii, ix and x (V only), EWG (24); adults iv-ix, DL (34); Oxshott, 27.v.11, EAB (BM); Esher, GCC (37) and (3); Weybridge, JAP (BM); and beyond the boundary at Woking, viii.1888 and vii.1890, ES (HD) and (3); 15.vi.1891, AB in AJC coll. (HD); Ottershaw, 24.v.60, DL (HD); Chobham, vii.1872, ES (HD) and (3); 22.vii.34 ♀, ECB (NM); Chobham Common, 29.v.55, WJLeQ (21); Horsell, JAP (BM); Gomshall, EAB (3); Abinger vi.1900, EAB (BM); Ripley, viii.1900, EAB (BM) and (3); and Runnymede, ix.55, GEW (40).

BUCKS. On the boundary at Slough (ICBFS) 22.iv.33, at toots of grass, WHG (41); (PILG), 26.v.55 and v.56, GEW (40); Fulmer, 2.vi.57, WJLeQ (21); and beyond at Hedgerley, 10.vi.53, GEW (40); Little Chalfont, 1.iii.53, WJLeQ (21); Burnham Beeches, 13.vi.55, GEW (40); and Ivinghoe Beacon, 2.vi.51, WJLeQ (21).

Tingis cardui (Linn.)

Sp. 160, p. 149

D&S p. 251 (*Monanthia cardui*) S p. 133 (*M. cardui*)

B p. 210 (Sp. 150, *M. cardui*)

Less common than the previous species. Almost exclusively found on the spear plume thistle (*Cirsium vulgare*); rarely on musk thistle (*Carduus natans*) and the marsh thistles, *Cirsium palustre* and *C. dissectum*. The larvae live in the involucre (whorl of bracts below petals) or just beneath it, and reach adult state from late July onwards.

MIDDX. Hammersmith, JAP (BM); Hounslow Heath, 1952, several examples taken on thistles in the swamp, GEW (33b); 9.vii.53, DL (SL) Hampstead Heath, 20.vi.49, DL (SL) and (1/1949-50, 36-38); (near Jack Straw's) 27.vi.49, DL (SL); Finchley, 13.vi.43, CHA (17); Hendon, 27.vi.03 ♂, ECB (NM); Harefield, 23.x.43, PJLR (20); 21.vi.52, WJLeQ (21).

HERTS. "Abundant and widely distributed on *Cirsium vulgare*. Hibernates as imago at base of thistle, or less commonly under bark of trees and fence posts. I have once taken a number hibernating adults in the hollow stems of dead *Heracleum sphondylium* at Rickmansworth" (*sic*), 27.ii.33, DCT (12); Rickmansworth, 15.viii.16, EAB (BM); 11.vi.50, DL (SL); and beyond the boundary at Harpenden, 11.ix.54, GGES (HD); Wymondley, EAB (11); Royston 27.v.12, EAB (BM); and Stevenage, viii.1880, EAB (BM).

ESSEX. Epping Forest (Hale End), 17.v.24, on blanket drying in garden, CN (35a); (Fairmead) on *Cirsium vulgare*, CN (35a); and beyond the boundary at Benfleet, 17.ix.50, SL (1/1950-51, 81).

KENT. Lewisham, n.d., WW (1/1900, 78); 17.iv.1891, AJC (HD); Kidbrook, WW (4) and (22); Darenth, 14.v.1893, AJC (HD); 17.vi.1899, WJA (SL); 8.vi.06 ♂, ECB (NM); Abbey Wood, 9.vi.64, a single adult on

Spear Thistle, *AAA* (51); Otford, 25.xi.22 and viii.22, *PH* (BM); *AMM* (22); and just beyond the boundary at Kingsdown, 28.viii.24, *EAB* (BM); and Borough Green, *WRD* (22).

SURREY. Chipstead, 19.viii.06 ♂ and ♀, *ECB* (NM); Redhill, *J&TL* (36); Buckland Hill, 4.iii.23 ♀, *ECB* (NM); Mickleham, *JAP* (BM); 19.viii.06 ♂ and ♀, *ECB* (NM); v.11, *WJA* (SL); Boxhill, 9.vi.17, *EAB* (BM); 4.ix.1895, *AJC* (HD); 4.iii.34 ♀, *ECB* (NM); 5.v.60, *DL* (HD); Bookham Common, ix, *DL* (34); viii.15, *WJA* (SL); 28.ix.37, *AEG* (MM); 4.v.52, *DL* (54); and beyond the boundary at Albury Mill Pond, 12.v.34, on thistles, *FJC* (1/1934-35, 14); Abinger Hammer, 11.v.12, *EAB* (BM); Leith Hill, viii.1895, *EAB* (BM); Ewhurst, viii.1895, *EAB* (BM); Horsell Common, 27.viii.32 ♀, *ECB* (NM); and Camberley, 1.viii.20, *EEG* (BM).

BUCKS. On the boundary at Slough (PILG), various dates, *GEW* (40); and beyond at Hedgerley, 25.v.53, *GEW* (40); Latimer, 14.vi.53, *WJLeQ* (21); near Amersham, n.d., numerous, *HJT* (1/1903, 6); and Coombe Hill, 15.iv.51 and 22.ix.51, *WJLeQ* (21).

Catoplatus fabricii (Stål)

Sp. 162, p. 150

D&S p. 248 (*Monanthia costata*) S p. 134 (*M. costata*)

B p. 212 (Sp. 153, *M. fabricii*)

Rare and local. Has been taken only singly on its host plant ox-eye daisy (*Chrysanthemum leucanthemum*), or by sweeping. Also said to be associated with the tor grass or chalk false brome (*Brachypodium pinnatum*). Adults have been taken from May-August. Essex records wanting.

MIDDX. Uxbridge and Harefield, 29.ix.33, 6.x.34 and 18.ix.35, common (*sic*) in moss, *DCT* (33a).

HERTS. Bushey, v, on railway bank, *JAP* (28), (36), (37) and (11).

KENT. Dartford, 18.ix.08, *ECB* (NM) and (22); Swanscombe, 17.viii.62, *WRD* (15) and (22); and Otford, *AMM* (22).

SURREY. Chipstead, 7.iv.12 ♂ and ♀ and 24.ix.10 ♀, *ECB* (NM); Caterham *GCC* (37) and (3); Reigate, *ES* (36), (37) and (3); Headley Lane, *TRB* (37) and (3); 25.viii.35 ♂♂ and ♀♀, *ECB* (NM); 7.ix.35, *ECB* in *PH* coll. (BM); Esher, *JAP* (BM); and beyond the boundary at Abinger, viii.1899, *EAB* (BM); Abinger Hammer, 11.v.12, *EAB* (BM); and Gomshall, *EAB* (3).

BUCKS. Just beyond the boundary at Little Chalfont, 31.v.53 and 11.x.53, *WJLeQ* (21); and at Wendover, 19.viii.15, *EAB* (BM).

Physatocheila dumetorum (H.-S.)

Sp. 163, p. 150

D&S p. 246 (*Monanthia dumetorum*) S p. 135 (*M. dumetorum*)

B p. 214 (Sp. 155, *M. dumetorum*)

Rare. Taken by beating old lichen-covered hawthorn and blackthorn, from April to October. Middx. Herts., Essex and Bucks. records wanting.

HERTS. Beyond the boundary at Royston, vi.08, 29.v.09 and 28.v.17, *EAB* (BM) (11).

KENT. Lee, *D&S* (37), (4) and (22); Darenth, *GCC* (37), (4) and (22); and just beyond the boundary at Higham, 13.iv.61 and 9.vi.63, *KCS* (14) (22).

SURREY. Mickleham, 5.vi.1898, *WJA* (SL); Boxhill, 24.ix.1892, *AJC* (HD); Ashted, *GCC* (37) and (3); Ashted Common, 14.ix.47, *SL* (1/1947-48, 71); Bookham Common, vi, ix and x, *DL* (34); 9.ix.51, *DL*

(SL); Effingham, 18.iv.31, on hawthorn, *TRE* (1/1931-32, 55); Ockham, 22.vii.49, *FJC* (SL); Oxshott, *TRB* (37) and (3); Esher, *GCC* (37) and (3); and beyond the boundary at Woking, *TRB* (3); and Chobham, viii.1874, *ES* (HD) (36) and (3).

BUCKS. Beyond the boundary at Burnham, n.d., n.c., (26).

Physatocheila costata (Fab.) ssp. *smreczynskii* Sp. 164, p. 150
(as *P. smreczynskii*)

Ref. Drake, C. J., *Lacebugs of the World: A Catalog* (Hemiptera: Tingitidae), Bull. U.S. Nat. Mus., **243**, 331 (1965).

D&S p. 247 (*Monanthia quadrimaculata*) S p. 135 (*M. quadrimaculata*) B p. 213 (Sp. 154, *M. quadrimaculata*)

Rare. Found on old lichen-covered apple trees in orchards and on wild apple trees in the hedgerows. The larvae occur from July to August and the adults from then until October. This species should be searched for in all likely localities in the London area.

KENT. Darenth Wood, v.50, on lichen-covered crab-apple tree, *AMM* (EMM **91**, 124) and (22).

SURREY. Beyond the boundary at Ewhurst, viii.1898, *EAB* (BM) and (3).

(Just beyond the western boundary it has been taken in Windsor Forest, Berks., 14.v.24, *HStJKD* (HD)).

Oncochila simplex (H.-S.) Sp. 166, p. 151

D&S p. 245 (*Monanthia simplex*) S p. 136 (*M. simplex*)

B p. 214 (Sp. 156, *M. simplex*)

Another rare and local species confined inland to its host plant, the wood spurge (*Euphorbia amygdaloides*) in damp woodland although a coastal specimen taken at The Warren, Folkestone 5.viii.59 by D. C. Thomas (specimen in BM) was found at the base of the sea spurge (*Euphorbia paralias*). The adults have been taken in the months of June to August. No records as yet from Middx., Herts or Essex.

KENT. Bexley, *JS* (28), (36), (37), (4) and (22); Darenth, *GCC* (37), (4) and (22); *JAP* (BM).

SURREY. Redhill, *J&RL* (37) and (3); Redstone, *J&TL* (36) (Possibly both the same record—E.W.G.).

BUCKS. Burnham, n.d., n.c. (26).

Dictyla convergens (H.-S.) Sp. 167, p. 151

(as *Monanthia humuli*)

Ref. Drake, C. J. and Ruhoff, F. A., The identification of *Acanthia humuli* Fab. and related species, *Bull. Southern Calif. Acad. Sci.*, **59**, 74 (1960).

D&S p. 244 (*Monanthia humuli*) S p. 136 (*M. humuli*)

B p. 215 (Sp. 157, *M. humuli*)

Uncommon. Associated with the water forget-me-not, *Myosotis scorpioides* and probably *M. caespitosa* also, growing by streams and ponds. The bug lays its black eggs on the stems of the plant during late May and the black larvae mature in August.

MIDDX. Poyle, 31.v.53, *GEW* (40); Ruislip, 21.viii.16, *EAB* (BM).

HERTS. Rickmansworth, 9.ix.34, *DCT* (12); 4.viii.57, *WJLeQ* (21); Hatfield, ix.1891, *EAB* (BM) and (11); 18.viii.63, *PJLR* (MM); and beyond the boundary at Redbourn, 10.viii.42, *HWJ* (43).

ESSEX. On the boundary at Harlow, ix.11, *PH* (BM).

KENT. Lee, iv, *D&S* (28), (4) and (39); Catford, 1894, *WW* (39); Brasted, n.d., associated with *Myosotis* growing on the banks of River Darent, *AMM* (22).

SURREY. Merton, *EAN* (3); Wimbledon, *GCC* (37); Reigate *JAP* (BM); Bookham Common, v.-vi and viii-x, *DL* (34); 9.vi.34, common, *FJC* (1/1934-35, 19); 28.ix.37, *AEG* (MM); 16.iv.43, *LCB* (MM); 13.ix.53 and 16.viii.55, *EWG* (24); 26.v.63, *PJLR* (MM); Esher, vi and vii.1874, *ES* (HD); and beyond the boundary at Woking, v.1888, *ES* (HD) and (3); Chobham, 16.vii.33, *AMM* in *EWG* coll. (24); Byfleet, 22.vii.1899, *AB* in *AJC* coll. (HD); Basingstoke Canal, between Pirbright Bridge and Frimley Green, 1954-5, *HDS* (50); Abinger, vi.02, *EAB* (BM); and Gomshall, viii.1892, *EAB* (BM).

BUCKS. On the boundary at Datchet (Ditton Park), 31.v.53, on *Myosotis scorpioides*, *GEW* (40); and beyond at Chesham, 19.vii.52, *WJLeQ* (21); and Burnham Beeches, 25.vi.56, *GEW* (40).

Agramma laeta (Fall.)

Sp. 168, p. 151

D&S p. 242

S p. 123 (*Serenthia laeta*)

B p. 200 (Sp. 138, *S. laeta*)

This local, minute species occurs in damp situations both in woodlands and on salt marshes. It is found on various grasses and sedges usually on the leaves from whence it has been taken by sweeping at all times of the year. Herts., Essex, Kent and Bucks. records wanting.

MIDDX. Ruislip Common (Poor's Field), 14.ix.63, a single specimen swept from grass near pond, *WFS* (49).

HERTS. Beyond the boundary at Royston, 26.v.17 (eggs, v.17), *EAB* (BM) and (11).

SURREY. Reigate, *JAP* (BM); viii.1899, by sweeping, *WW* (1/1899, 97); *ES* (3); Reigate Hill, n.d., *n.c.* (36); Walton Heath, 24.iii.07 ♂, *ECB* (NM); Boxhill, 9.vi.17 and 31.v.19, *EAB* (BM); v, by sweeping grass, *D&S* (28); and beyond the boundary at Woking, *ES* (3); Chobham, vi.1891, *ES* (HD) and (3); Shere, viii.1899, *EAB* (BM) and (3); and Gomshall, viii.1899, *EAB* (BN) and (3).

REDUVIIDAE (Assassin Bugs)

This family has 6 representatives in Britain of which 5 species have been recorded in the London area. They are all predatory.

Empicoris vagabundus (Linn.)

Sp. 169, p. 153

D&S p. 536 (*Ploiaria vagabunda*) *S* p. 159 (*P. vagabunda*)

B p. 257 (Sp. 179, *Ploiariola vagabunda*)

Locally common. Found on old trees, both deciduous (e.g. oak, hornbeam, hazel, etc.), and coniferous (e.g. spruce, pine). Also occurs on ivy. It stalks its prey of aphids, microlepidoptera, small caterpillars, etc. amid the foliage. The larvae are to be found from late May to August and the adults from July to October.

MIDDX. Muswell Hill, *EAB* (37).

HERTS. Rickmansworth, 1.ix.34, on *Quercus*, *DCT* (12); Bushey, *JAP* (BM); Barnet, viii.1885, *EAB* (BM); Totteridge, ix.1891, *EAB* (BM).

ESSEX. Epping Forest (Chingford) 7.ix.08, *EAB* (BM); 7.ix.08, *CN* (35a); (Fairmead), 29.ix.25, *CN* (35a).

KENT. Lee, ix, abundant on ivy, *D&S* (28), (39), (4) and (22); Blackheath, *WW* (39); (garden at 63 Blackheath Park), 14.viii.64, a single adult

beaten from bramble, and 16.viii.64, a single adult beaten from ivy, *AAA* (51).

SURREY. Ashted Woods, 28.ix.46, on oak, *FJC* (1/1946-47, 77); Reigate, *TRB* (37) and (3); Headley Lane, *TRB* (37); Mickleham, *TRB* (37) and (3); viii.17, *WJA* (SL); Boxhill, 12.ix.51, on *Buxus*, *GEW* (40); 12.ix.53 *WJLeQ* (21); Bookham Common, 7.viii.50 and 19.viii.50, *DL* (SL); 15.viii.53, common on lichen-covered hawthorns and blackthorns, *DL* (1/1953-54, 89) and (SL), "and can be obtained in dozens by beating these trees in Central Wood", *DL* (34); Oxshott, 11.viii.53, *DL* (SL); and beyond the boundary at Chobham, viii.1884, *ES* (HD) and (3); 19.ix.-1891, *AJC* (HD); Horsell, *JAP* (BM); 7.viii.33, *JJC* (HD); Horsell Common 7.viii.33 and 3.ix.33, *ECB* (NM); Ewhurst, viii.1889, *EAB* (BM) and (3); Shalford, *EAB* (3); Holmbury, *EAB* (3); and Camberley, viii.33, *EEG* (BM).

BUCKS. On the boundary at Slough (PILG), 23.viii.51, on spruce, *GEW* (40); and beyond at Amersham, 23.ix.51, on spruce, *WJLeQ* (21); South Heath, 15.x.50, *WJLeQ* (21); and Hyde Heath, 30.viii.53, on *Buxus*, *WJLeQ* (21).

Empicoris culiciformis (De Geer)

Sp. 170, p. 154

D&S p. 536 (*Ploiaria erratica*) S p. 159 (*P. culiciformis*)

B p. 258 (Sp. 180, *Ploiariola culiciformis*)

Rare. Occurs in old haystacks, on old walls, in thatched roofs and also recorded from old sparrows' nests, farm granaries and chicken coops. The black eggs are laid in late August and the larvae, found throughout September, are mature by the end of that month. The adults hibernate through the winter becoming active again in April.

MIDDXX. Regent's Park, 29.ix.50, in Sparrow's nest, *GEW* (55); Finchley, circa 1937, *CHA* (17); 14.ix.47, 20.xii.47 and 20.i.48, active indoors *CHA* (17) and (EMM 96, 91); Hammersmith, 4.xi.24, *WEP*; Uxbridge, 17.viii.34 to light at window, *DCT* (33a); 28.viii.35, a few in roof of chicken coops, *DCT* (33a); Heston, 5.x.37, *HStJKD*.

HERTS. Watford, 12.ix.49, in a house, *IFL* (BM).

ESSEX. Leyton, 1950, in garden, *WAS* (35b); Epping Forest (Hale End), n.d., indoors on wall in bedroom "probably from Sparrows nests amongst *Clematis* below window", *CN* (35a); C.T.B., 12.ix.50, in Squirrel's drey, *BJS* (SL); and beyond the boundary at Canvey Island, 10.iv.49, *RDW* (SL).

KENT. Blackheath, n.d., at mercury vapour light, *AAA* (22); London, S.E.2 (= Abbey Wood), vi.62, *KPW* (BM); Westerham, 25.v.22, *PH* (BM).

SURREY. Reigate, *ES* (37) and (3); and beyond the boundary at Chobham *ES* (3); Horsell, *JAP* (BM); Shere, *EAN* (3); Holmbury, viii.1896, *EAB* (BM) and (3); Abinger Hammer, 11.v.12, *EAB* (BM); and Westcott, 13.x.36, *WEC* (BM); 17.vii.37, n.c. (probably *WEC*) (BM).

BUCKS. On the boundary at Datchet, 8.xi.55, in farm granary, *GEW* (40); 23.viii.50, in sparrow's nest, *GEW* (40) and (55); Slough (PILG), 6.i.50 and 10.viii.50, in sparrow's nest in eaves of building, *GEW* (40), (55) and (EMM 87, 103); and beyond at Chesham, iv.59, *WJLeQ* (21); Little Chalfont, 16.i.51, 21.ii.57, 24.vi.57 and 20.ix.54, *WJLeQ* (21); and Amersham, 12.vi.52, *WJLeQ* (21).

Empicoris baerensprungi (Dohrn)

Sp. 171, p. 154

B p. 259 (Sp. 181, *Ploiariola baerensprungi*)

Rare. The only records for this bug in the London area are from Surrey. Dicker (1941, EMM 77, 104) in observations at Riseley (Hants.) and Bucklebury (Berks.) occasionally found this species occurring singly, though very sparsely distributed. It was always "taken from the same position viz sitting on the jagged stump where a dead branch had been broken off an oak; beating was unsuccessful".

SURREY. Bookham Common, vii, DL (34); Esher, 30.viii.1874, on a pile of cut branches, GCC (38); and beyond the boundary at Woking, GCC (3).

Reduvius personatus (Linn.)

Sp. 173, p. 155

D&S p. 544

S p. 162

B p. 261 (Sp. 183)

Occasional. Found in old houses, lofts, outbuildings, warehouses etc., sometimes associated with birds' nests in these same situations; both larvae and adults are predacious, feeding upon small insects, flies, larvae, silverfish, bird lice, and harvestmen. The adults have been taken from March to August though seldom found in any large numbers. Kent and Surrey records wanting.

MIDDX. Enfield, July 1935, in a house, TRE (1/1935-36, 22); Brentford Docks, 15.xi.50, larval skins in warehouse, GEW (40).

HERTS. Berkhamsted, 22.vi.33, a single ♀ to light, DCT (12); and beyond the boundary at Stevenage, 22.vi.51, CdeW (BM); and at Bishop's Stortford, 19.vii.47, in a mill, SE (BM).

ESSEX. Epping Forest (Loughton), 1.vii.58, FB (18); near Chigwell Row, c. 1817, in a spider's web, Mr. Sharp (29); and beyond the boundary at Southend, 18.vi.50, larva, Miss King (BM).

KENT. Beyond the boundary at Gravesend, TRES (22); and Tonbridge, JAP (BM).

SURREY. Beyond the boundary at Woking, ES (3); Chobham 17.vii.41, "on Mr. L. F. Barton's coat in garden", ECB (NM); and Guildford, 23.iii.51, in pigeon's nest in a derelict theatre, GEW (40) and (55).

BUCKS. On the boundary at Datchet, vi.49, at light, GEW (40), (55) and (EMM 86, 301).

Coranus subapterus (De Geer)

Sp. 174, p. 156

D&S p. 541

S p. 163

B p. 265 (Sp. 184)

Local. Occurs on sandy heaths associated with the common ling or heather (*Calluna vulgaris*). The adults which are predatory hunt their prey of insects and spiders on the ground. They are to be found from July until October. The species overwinters in the ova stage; eggs usually laid in crevices in the ground, sometimes in litter and moss. Herts., Essex and Bucks. records wanting.

MIDDX. Hounslow Heath, 26.vii.52, a macropterous ♀ found with three specimens of *Nabis boops* beneath *Calluna*, GEW (33b) and (EMM 89, 303).

KENT. Plumstead, WW (39); and Otford, 21.ix.19 ♀, ECB (NM).

SURREY. Addington Hills, D&S (28), (36), (37) and (3); Shirley, EAN (3); Boxhill, 10.x.09 ♂, ECB (NM); Oxshott Heath, 30.viii.02, SWK (SL); 28.ix.02 ♂, ECB (NM); 22.vii.50, FJC (1/1950-51, 75); 2.ix.50, DL (1/1950-51, 79); 16.ix.50, WJLeQ (21); 30.vi.51, PJC (1/1951-52, 73);

30.vi.51, *DL* (SL); 12.vii.52, *DL* (SL) and (1/1952-53, 84); 15.ix.63 a single adult by sweeping *AAA* (51); 27.vii.64, a single adult beneath mat of heather, *AAA* (51); 15.ix.60, *MA* (HD); 28.vii.57, *GGES* (HD); Esher Common, *EAN* (3); 19.ix.63, a single adult by sweeping, *AAA* (51); *JAP* (BM); Weybridge, *D&S* (28), (36), (37) and (3); and beyond the boundary at Woking, *ES* (3); *GCC* (BM); 3.x.12, *JJC* (HD); 2.x.13, *JJW* (HD); Horsell Common, 24.vii.29 ♂, 7.viii.11 ♀ and 10.viii.16 ♂, *ECB* (NM); Chobham Common, viii.84 and viii.82, *ES* (HD); various dates *GEW* (40); Ash Vale, 4.ix.49, very common, *DL* (1/1949-50, 78) and (SL); 10.ix.50, a macropterous ♀ (the second recorded in this country) in cop. with ♂, *DL* (1/1950-51, 36 and 80); Basingstoke Canal between Pirbright Bridge and Frimley Green, 1954-5, *HDS* (50); Farley Heath, 31.vii.29 ♀, *ECB* (NM); Shalford, *EAB* (3); Ewhurst, viii.1889, *EAB* (BM) and (3); Coldharbour, viii.1895, *EAB* (BM) and (3); and Leith Hill, viii.1895, *EAB* (BM).

BUCKS. On the boundary at Fulmer (Stoke Common), 31.viii.52 and 25.viii.56, *GEW* (40) and (EMM, 89, 2).

NABIDAE (Damsel Bugs)

This family is represented in Britain by 12 native species and 1 alien species, of which all except one native species (*viz. Nabis pseudoferus*) have been recorded in the London area. All are predaceous feeding on aphids, small caterpillars, mites, and various Mirid bugs.

Nabis flavomarginatus (Scholtz)

Sp. 175, p. 161

S p. 168

B p. 278 (Sp. 190)

A grass inhabiting Nabid, common throughout the London area, particularly in damper situations. The adults and last instar larvae are often taken by sweeping from July-October as they frequently crawl up the stems to the grass flower heads when the sun is shining. The macropterous form of the adult is quite rare. Overwinters in the egg stage.

MIDDX. Hampstead Heath, 30.vi.49, *DL* (SL) and (1/1949-50, 36-38); Highgate Wood, vii.1892, ♂ macropterous, *EAB* (BM); Finchley, 21.viii.43, *CHA* (17); Hounslow Heath, 1952, occasional but generally distributed, *GEW* (33b); Lampton, 26.viii.44, *HStJKD* (HD); Ruislip N.R., 21.v.56, III and II instar larvae; 27.vi.55, V instar larva; 29.vii.55 adult ♀ and 1.ix.55 adult ♂♂, *EWG* (24) and (49).

HERTS. Bushey, *JAP* (BM); Hatfield, 19.vii.64, *PJLR* (MM); and beyond the boundary at Harpenden, 12.vii.55 ♂, 26.viii.54 ♂ and 1.ix.54 ♀, *GGES* (HD); Letchworth, *RP* (11); and Royston, 26.v.14, I instar larva, *EAB* (BM). Given as "widely distributed, in dry grassy places" for the county, *DCT* (12).

ESSEX. Epping Forest, 28.ix.63, *PSB* (16); and beyond the boundary at Canvey Island, 27.vi.14, V instar larva and 17.v.14 I instar larva, *EAB* (BM); Benfleet, 23.ix.56, *WJLeQ* (21); Writtle, viii.53, *JHF* (42); and St. Osyth, 31.viii.14 ♀ (brachypterous) and ix.08 ♀ (macropterous), *BSh* in *PH* coll. (BM).

KENT. Charlton, *AAA* (22); Lewisham, x.1890, ♀ macropterous, [probably *AJC*] (HD); 25.ix.1893, ♂ brachypterous, [probably *AJC*] (HD); Kidbrook, 1896, *WW* (39), (4) and (22); Swanscombe, 12.vii.64, *PSB* (16); Otford, *AMM* (22); Westerham, ix.22, *PH* (BM); and on the boundary at Gravesend, 2.viii.07, ♂ macropterous, *JWY* (HD); 8.ix.34 ♂, *ECB* (NM).

SURREY. Banstead Downs, 5.vii.57 ♂♂ and ♀♀, *EWG* (24); Banstead (Rosebushes, nr. Gt. Burgh), 5.vii.53, *EWG* (24); Croydon, *JAP* (BM); Reigate, *ES* (36) and (3); *TRB* (37); Cheam (Nonsuch Park), 8.viii.55 and 13.viii.54, *EWG* (34); Bookham Common, 14.vi.53, II instar larva, *EWG* (24); adults from vii-ix, 1953-58, *EWG* (24); vii-ix, *DL* (34); 19.vii.64, *PSB* (16); Claygate, *JAP* (BM); Oxshott Heath, 2.ix.50, *DL* (1/1950-51, 79); and beyond the boundary at Woking, viii.1888, *ES* (HD) and (3); Chobham, viii.1876, ♀ macropterous and ♀ brachypterous, vii.1892, ♂ brachypterous, *ES* (HD), (36) and (3); 22.vii.33 ♂ and ♀♀, *ECB* (NM); and Virginia Water, 25.vii.56, *GEW* (40).

BUCKS. On the boundary at Slough, 18.vii.59, *GEW* (40) and (EMM 96, 13); and beyond at Latimer, 24.vii.54, *WJLeQ* (21), and Penn Street, 7.ix.50, *WJLeQ* (21).

Nabis ferus (Linn.)

Sp. 176, p. 162

D&S p. 555

S p. 170

B p. 282 (Sp. 193)

Another common Nabid of the London area preferring drier grassy areas to those inhabited by the previous species. It overwinters as an adult, eggs being laid in May the progeny from which are mature by August and September.

MIDDX. Hampstead Heath (Ken Wood, west meadow), 1.x.49, *DL* (SL) and (1/1949-50, 36-38); Northwood, 20.xi.43, *PJLR* (20); Ruislip N.R., 27.vi.55, a single ♀, *EWG* (24) and (49); 31.viii.62, a single ♂ swept from *Deschampsia* grassland, *WFS* (49); Hounslow Heath, 1952, frequent beneath *Calluna* on the Heath, *GEW* (33b); 22.x.59, a single adult, *AAA* (51).

HERTS. "Abundant and widely distributed", *DCT* (12); Radlett, 26.v.60, *DL* (HD); Whetstone, 29.viii.61, a single ♂ caught in a mercury-vapour light trap, *PHW* (47); Barnet, viii.1885, *EAB* (BM); and beyond the boundary at Harpenden (Rothamsted Expt. Station grounds), 21.iv.53, *TRES* (1/1953-54, 4); 21.iv.53, *DL* (SL); 20.viii.55, in light trap, *GGES* (HD); Royston, 30.v.14, *EAB* (BM) and (11); and Wymondley, viii.1880, *EAB* (BM).

ESSEX. Epping Forest, 16.ix.63, *PSB* (16); 8.vi.62, a single adult by sweeping, *AAA* (51); and beyond the boundary at Benfleet, 23.ix.56, *WJLeQ* (21); Danbury Common, viii.53, *JHF* (42); and Widford, viii.53, *JHF* (42).

KENT. Lee, *WW* (39); Plumstead, *WW* (39); Kidbrook, *WW* (39), (4) and (22); Blackheath, "as a rule rare in my garden but somewhat common in 1959, mid-August to early October, on flowers of Michaelmas daisy and by sweeping"; earliest, 15.viii.59; 24.x.59, one in litter; 21.xi.59, one in dead leaves, *AAA* (51); Lewisham, 5.iv.1891, *AJC* (HD); Erith Marshes, 16.x.59, several swept, *AAA* (51); Darenth Chalk Pit, 4.ix.64, a single specimen, *AAA* (51) and (22); Swanscombe cutting, 27.viii.61, *WRD* (15) and (22); Farningham Wood, 10.iii.63, *KCS* (14); Shoreham, 13.viii.21, *PH* (BM); 27.ii.60 and 19.i.64, *KCS* (14); and on the boundary at Gravesend, 8.ix.34 ♂ and ♀, *ECB* (NM).

SURREY. Banstead Downs, 5.vii.57, a single adult ♀, *EWG* (24); Coulsdon, 25.ix.06 ♂, *ECB* (NM); Warlingham (Halliloo Valley), 29.viii.64, *KCS* (14); Redhill (Redstone), by sweeping, *J&TL* (36); Buckland Hill, at roots of grass, *J&TL* (36); Mickleham, *JAP* (BM); 29.vi.11 ♀, *ECB* (NM); Boxhill, 24.ix.59, frequent by sweeping, general beating and at roots of herbage, *AAA* (51); 17.ix.28 ♂ and ♀; 13.viii.05 ♀, *ECB* (NM);

2.x.55, *EWG* (24); Bookham Common, adults from late July to mid October, 1953-58, *EWG* (24); vii-ix, *DL* (34); 20.x.63, *PSB* (16); Oxshott Heath, 2.ix.50, *DL* (1/1950-51, 79); 16.ix.50, *WJLeQ* (21); 15.ix.63, a single adult swept in the woods, *AAA* (51); Esher Common, 23.iii.31, *FJC* (1/1931-32, 49); Weybridge, 22.ix.63, *PSB* (16); and beyond the boundary at Chobham Common, 23.ix.56, *GEW* (40); 22.ix.57, *WJLeQ* (21); Egham, 15.x.55, in a sand pit, *GEW* (40); Virginia Water, 5.vii.57, *GEW* (40); Albury Heath, viii.1892, *EAB* (BM); and Shere, viii.1892, *EAB* (BM).

BUCKS. On the boundary at Datchet, 30.iii.53, in a garden, *GEW* (40); Slough (PILG), various dates, *GEW* (40); (ICBFS), 26.ix.34, at roots of grass, *WHG* (41); and beyond at Hedgerley, 17.vii.55, *GEW* (40); Chalfont St. Giles, 13.i.52, *WJLeQ* (21); Chalfont St. Peter, 14.vii.25, *EAB* (BM); Amersham, 14.ix.52, *WJLeQ* (21); and Burnham Beeches, 31.iii.57, *WJLeQ* (21).

Nabis rugosus (Linn.)

Sp. 178, p. 163

D&S p. 552 (*N. dorsalis*)

S p. 171

B p. 284 (Sp. 194)

Probably the most common and widely distributed damsel bug of commons and heaths in the London area. It occurs wherever the grass grows more than a foot high. Like *N. flavomarginatus* of damper situations, it is frequently taken by sweeping because of its habit of crawling to the top of grasses during the day. The adults are usually brachypterous; rarely macropterous.

MIDDXX. Hampstead Heath, 14.v.49, *DL* (SL) and (1/1949-50, 36-38); 31.vii.43, *CHA* (17); Finchley, 31.vii.43, *CHA* (17); East Finchley (Coldfall Woods), 8.x.1898, *FAD* (HD); Northwood, 21.viii.16, adults and V instar larvae, *EAB* (BM); Ruislip N.R., 1952-58, adults taken from end of May until beginning of September, and IV and IV instar larvae from late July to September, *EWG* (49); Harefield, 21.vi.52, *WJLeQ* (21); Uxbridge, 23.viii.64, *PJLR* (MM); Lampton, 8.v.44 and 17.vi.47, *HStJKD* (HD); Hounslow Heath, 1952, common the Heath beneath *Calluna*, *GEW* (33b).

HERTS. Barnet, viii.1885, *EAB* (BM); Rickmansworth, 3.ix.49, *DL* (SL); Bricket Wood Common, 3.vii.56, V instar larva, *EWG* (24); Wormley Wood, 10.viii.41, *HWJ* (43); Hatfield, 6 and 7.vi.64, *PJLR* (MM); and beyond the boundary at Bovingdon, *DCT* (12); Chorley Wood Common, 29.ix.63, *PSB* (16); Berkampstead, 14.x.62, *PSB* (16); Harpenden (Rothamsted Expt. Station grounds), *DCT* (12); 21.iv.53, *TRES* (1/1953-54, 4); 19.ix.54, *GGES* (HD); Tring, *DCT* (12); Herts Beacon, *DCT* (12); Royston, 30.v.14, I instar larva, *EAB* (BM); and Ashridge, 2.i.34, hibernating at roots of grass, in moss, etc., *DCT* (12).

ESSEX. Epping Forest, generally distributed on grass and other herbage, *CN* (35a); 7.x.62, *PSB* (16); 8.vi.62, a single adult by sweeping, *AAA* (51); (Loughton) ix.1893 and 12.iv.11, *EAB* (BM); (Chingford), x.1890, *EAB* (BM); (Theydon Bois), vii.22, III and II instar larvae, *EAB* (BM).

KENT. Lee, *WW* (39), (4) and (22); Plumstead, *WW* (39), (4) and (22); (Bostall Woods) 27.ix.58, a single adult at roots of clover, *AAA* (51); Lewisham, *WW* (39), (4) and (22); Abbey Wood, 25.vi.64, 3.vii and 16.vii.62, by sweeping, *AAA* (51); Dartford, 18.ix.08 ♀, *ECB* (NM); 21.i.1896, *AJC* (HD); Darenth Wood, *AHG* (1947 or 48) (56); *KCS* (22); 28.v.1893, *AJC*

(HD); 7.vi.17 ♀, *ECB* (NM); Swanscombe, 8.vi.63, *KCS* (14); Farningham Wood, 23.ix.51, *SL* (1/1951-52, 81); 21.iv.59 (14) and (22); 28.v.56 ♂ and ♀, *EWG* (24); 22.iv.58, a pair under broom, *AAA* (51); 25.v.63, *PJLR* (MM); Fawkham, 15.ix.53, *GGES* (HD); Downe (Darwin's bank), 19.x.63, *KCS* (14); Otford, 30.ix.22, *PH* (BM); *AAA* (22); Shoreham, 14.v.60, *KCS* (14); Westerham, 20.v.22, *PH* (BM); 17.vi.51, *DL* (1/1951-52, 72); *KCS* (22); and beyond the boundary at Addington, *KCS* (22); Ryarsh, *AMM* (22); and Boxley, *AMM* (22); *HKK* (22).

SURREY. Richmond Park, 4.xi.05 ♂, *ECB* (NM); Wimbledon Common, 25.vi.55, V and IV instar larvae, *EWG* (24); Coulsdon, 25.ix.06 ♂, *ECB* (NM); Old Coulsdon (Happy Valley), 4.vii.54, *EWG* (24) and (EMM 90, xxxix); Purley, 24.x.02, n.c. (SL) and (in *WJLeQ* coll. (21)); Caterham, x.1897, *AJC* (HD); Addington, 6.x.62, *SL* (1/1962, 104); Tatsfield, 6 and 19.iv.21, *LCB* (MM); Oxted, 11.vi.93, *AJC* (HD); Reigate (Redstone), by sweeping, *J&TL* (36); Godstone, 22.vi.63, *KCS* (14) and (48/Sept. 1963); Chipstead, 16.iv.12, *EAB* (BM); 27.ix.08 ♀, *ECB* (NM); Banstead Downs, 5.vii.57, V and III instar larvae, and 23.viii.55, V instar larva, *EWG* (24); adults on two or three occasions, *DC* in *AAA* coll. (51); Banstead (Rosebushes near Gt. Burgh), 5.vii.53, adult and V instar larva, *EWG* (24); Cheam (Nonsuch Park), 13.viii.54, *EWG* (24); Boxhill, 12.iii.-1895 ♀, 29.viii.37 ♂ and ♀, 26.ix.39 ♂, *ECB* (NM); 27.viii.50, *DL* (1/1950-51, 77); 2.x.55, *EWG* (24); Epsom Common, 6.ix.53, V instar larva, *EWG* (24); Ashted Common, 28.ix.46, *FJC* (1/1946-47, 77); Bookham Common, 1953-58, adults from May-October, and various instar larvae as follows II (3rd week of June), III (mid July-mid August), IV (2nd week August), and V (mid August-mid September, with one exceptionally early example on 21.vi.55) all taken by sweeping, *EWG* (24); adults viii and ix, *DL* (34); 20.x.63, *PSB* (16); Oxshott Heath, 17.iv.25, *LCB* (MM); 2.ix.50, *DL* (1/1950-51, 79); 21.viii.54 (adult) and 4.viii.55 (V instar larva), *EWG* (24); 13.x.62, *SW* (44); Esher Common, 4.viii.55 (V and IV instar larvae), *EWG* (24); Weybridge, 25.v.47, by sweeping grass, *TRES* (13); 30.vi.63 and 22.ix.63, *PSB* (16); and beyond the boundary at Woking, 1.iv.1893, *AJC* (HD); ix.02, *ES* (HD); Chobham Common, 25.iv.37 ♂ and 11.ix.38 ♂, *ECB* (NM); Virginia Water, (probably 1947 or 48), *AHG* (56); Abinger Hammer, 11.v.12, adult and I instar larva, *EAB* (BM); Ewhurst viii.1889, (BM); and Milford, 13.vii.63, *PSB* (16).

BUCKS. On the boundary at Datchet, 3.v.63, *GEW* (40); Slough (ICBFS) 5.v.33, at roots of grass, *WHG* (41); (PILG) 23.iv.53 and 24.v.55, *GEW* (40); and beyond at Latimer, 16.viii.52, *WJLeQ* (21); Little Chalfont, 16.v.52 and 4.vii.53, *WJLeQ* (21); Amersham, 10.vi.51, *WJLeQ* (21); Chalfont St. Giles (Hodgemoor Wood), 7.vi.52 and 30.viii.52, *WJLeQ* (21); Chalfont St. Peter, 14.vii.25, V, IV and III instar larvae, *EAB* (BM); and Burnham Beeches, viii.1893, *EAB* (BM).

Nabis ericetorum (Scholtz)

Sp. 179, p. 164

S p. 171

B p. 286 (Sp. 195)

Locally common on Commons and heaths in the London area wherever heather (*Calluna*) and heath (*Erica* spp.) are abundant. Although pairing may occur in the autumn the female does not lay ripe eggs until after hibernating for the winter when mating also begins again. The larvae pass through their five instars during late Spring and throughout the summer, the first adults being found in mid-August. Herts. records wanting.

MIDDX. Hampstead Heath, 29.v.44, "persisting for at least 8 years after the disappearance of the heather", *CHA* (EMM 81, 113) and (*Southwood and Leston*, p. 164); Ruislip Common, 20.ix.34, a few under *Erica*, *DCT* (33a).

HERTS. Beyond the boundary at Berkhamstead Common, 2.x.35, under *Erica*, *DCT* (12).

ESSEX. Epping Forest, under "heath" wherever it occurs, *CN* (35a); 16.ix.63, *PSB* (16); (Chingford), x.1890, *EAB* (BM); (High Beech), ix.07, *EAB* (BM).

KENT. Plumstead, *WW* (39), (4) and (22); Farningham Wood, 5.xi.56 and 4.xi.62, *KCS* (14) and (22).

SURREY. Wimbledon Common, 25.vi.55, *EWG* (24); Purley, *JAP* (BM); Ashted Common, 20.vii.46, *FJC* (1/1946-47, 74); Oxshott Heath, 26.vii.1892, *AJC* (HD); 6.ix.02, *n.c.* (SL); 19.ii.05 ♂ and ♀, 7.v.11 ♂, and 30.viii.03 ♀, *ECB* (NM); 22.vii.50, *FJC* (1/1950-51, 75); 2.ix.50, *DL* (1/1950-51, 79); 16.ix.50, *WJLeQ* (21); 30.xi.51, *SL* (1/1951-52, 73); 24.viii.52, *WJLeQ* (21); vii. and x.54, under heather, *AAA* (51); 4.viii.55, *EWG* (24); 7.ix.58, common and some beaten from pines, *AAA* (51); 13.ix.60, *MA* (HD); 17.ix.64, *PJLR* (MM); 15.ix.63, adults and larvae by sweeping, *AAA* (51); Esher Common, 23.iii.31, *FJC* (1/1931-32, 49); 30.i.21, *JJC* (HD); 4.viii.55, *EWG* (24); 15.vi.58, *KCS* (14); Weybridge, 14.x.1860, *JAP* (BM); and beyond the boundary at Woking, 4.xi.20, in sand pit, *HStJKD* (HD); Chobham Common, 22.vii.33 ♀, *ECB* (NM); 31.v.63, *WJLeQ* (21); 6.ix.53, *GEW* (40); Horsell Common, 4.iv.04 ♂ and 3.ix.33 ♂, *ECB* (NM); 7.viii.33, *AJC* (HD); Byfleet, 20.v.16, *EAB* (BM); 8.vii.50, *DL* (1/1950-51, 73); 9.vii.50, *DL* (SL); Wisley, 13.iii.65, *PSB* (16); Ash Vale, 4.ix.49, *DL* (SL) and (1/1949-50, 78); Camberley, viii.33, *EEG* (BM); Ewhurst, viii.1890, *EAB* (BM); and Hindhead, 13.vii.63, *PSB* (16).

BUCKS. On the boundary at Stoke Common, W. of Fulmer, 17.viii.52, *WJLeQ* (21).

Nabis brevis (Scholtz)

Sp. 180, p. 165

B p. 287 (Sp. 196)

Rare. Confined to bogs and damp marshy places on heaths—habitats which have regrettably become much decreased in number in this country during the last half century. There have been no records for this species anywhere near the Society's area in the last 50 years.

SURREY. Beyond the boundary at Woking, vi.1888, *ES* (HD); ix.1888, *ES* (HD); ix.02, *ES* (BM in *EAB* coll.) and (HD); and at Byfleet, 27.ix.13, *EAB* (BM).

Aptus mirmicoides (Costa)

Sp. 181, p. 165

(as *Himacerus mirmicoides*)

Ref.: Kerzher, I. M., Beitrag zum Kenntnis der Unterfamilie Nabinae (Het: Nabidae), *Acta Ent. Mus. Nat. Prague*, **35**, 5-61 (1963).

D&S p. 550 (*Nabis apterus*) S p. 167 (*N. lativentris*)

B p. 271 (Sp. 187, *N. lativentris*)

Locally common in the London area on heaths and chalk downland, amongst grass, heather, etc., wherever it is dry and open to the sunlight. The larvae mimic the black ant (*Lasius niger*) in whose company on heaths they may frequently be found though there is no evidence that they receive any true hospitality from their hosts. Indeed, Wasmann's

grouping of myrmecophiles later followed by Wheeler¹ and Donisthorpe² would seem to class insects such as *Aptus mirmicoides* larvae as being synoeketes, i.e. indifferently tolerated commensals or "lodgers" of the ants. Thomas (12) records the adult of this species as predatory on root-feeding aphids and *Dactylopius* sp. (Hom: Coccidae) and Massee (22) on the Fruit-tree Red Spider-mite and other fruit pests.

MIDDX. Hillingdon, 17.vi.36, larvae feeding on root-feeding Aphidae, *DCT* (33a); Uxbridge, 12.ix.35, on *Urtica*, *DCT* (33a); Lampton, 29.v.47, (adult) and 30.vi.44 (II instar larva), *HStJKD* (HD); Hounslow Heath, 1952, abundant under and around *Rumex* on the ash and rubble tip, *GGES* (33b); 22.x.59, a single adult under herbage, *AAA* (51).

HERTS. Wormley Wood, 3.viii.41, *HWJ* (43); Rickmansworth, 22.viii.45, III instar larva, *HStJKD* (HD); 1.viii.48, *DL* (SL); West Hyde 14.ix.34, *DCT* (12); and beyond the boundary at Harpenden, 1.ix.55, *GGES* (HD); and Royston, *EAB* (11); 30.v.14, I instar larva, *EAB* (BM).

ESSEX. Orsett, 1.x.55, *KCS* (22); and beyond the boundary at Blackmore, nr. Writtle, viii.53, *JHF* (42); and Danbury Common, viii.53, *JHF* (42).

KENT. Lee, *WW* (39) and (4); Shooter's Hill, *WW* (39); Kidbrook, *WW* (39); Plumstead, *WW* (39); Dartford, *AMM* (22); Dartford Marshes, 26.viii.53, in gravel pit, IV instar larva, n.c. (BM); Southfleet, *AMM* (22); Darenth, 28.v.1893, *ALC* (HD); Darenth Chalk pit, 10.ix.60 and 9.x.63, amongst low herbage, *AAA* (51); Swanscombe, 8.vi.63, *KCS* (14); Stone, 4.x.54, *KCS* (14); Bean, 25.ix.55, *KCS* (14); Farningham Wood, 23.ix.51, *SL* (1/1951-52, 81) and (22); Bromley, vi.1887, *ES* (HD); Eynsford, 19.viii.33, *KGB* (1/1933-34, 33); 14.ix.52, *SW* (44); Farnborough, 23.ix.51, *SW* (44); Fawkham, 25.ix.53, *GGES* (HD); Otford, 3.viii.61, a single nymph by grubbing on hillside in chalk-pit, Gravesend, 14.iv.46, under heather, 28.viii.46, larvae on path, and 8.x.46, adults, *TRES* (13).

SURREY. Carshalton (Fairlawn Road, by The Oaks Park), 1.x.50, two ♀♀ inside dehiscent cupule on low branch of beech tree, *EWG* (24); Cheam (Nonsuch Park), 13.viii.54, *EWG* (24); Chipstead, 11.v.19 ♀ and 17.iv.11 ♀, *ECB* (NM); Tatsfield, 19.iii.21, *LCB* (MM); Reigate (Redstone), in sand-pit, *J&TL* (36); Buckland Hill, 7.v.05 ♀ and 10.vi.06 ♀, *ECB* (NM); Boxhill, 27.viii.50, *DL* (1/1950-51, 77); Claygate, *JAP* (BM); Bookham Common; 9.x.55, adult, and various instars as follows, V (14.vii.58), IV (14.vii.58 and 16.viii.55), III (21.vi.55, 10.vii.55 and 10.viii.58), and II (21.vi.55); vii, *DL* (34); 12.viii.42, *LCB* (MM); 26.ix.64, two adults by sweeping, *AAA* (51); Oxshott Heath, 5.xi.05 ♀, *ECB* (NM); 2.ix.50, *DL* (1/1950-51, 79); 12.vii.52, V and III instar larvae, *SL* (1/1952-53, 84); 21.viii.54, *EWG* (24); Esher Common, *JAP* (BM); 4.viii.55 ♂♂, ♀♀, and V and IV instar larvae, *EWG* (24); and beyond the boundary at Woking, v.1888, *ES* (HD); Byfleet, 8.ix.35, numerous on oak, *FJC* (1/1935-36, 28); Camberley, 28.vi.20, II instar larva, *EEG* (BM); Ash Vale, 4.ix.49, V instar larvae, and adults all micropterous except a single macropter— "the first found in over 70 imagines taken at various localities in the Home Counties", *DL* (SL) and (1/1949-50, 17 and 78); 10.ix.50, adults including a macropterous ♀, *DL* (1/1950-51, 80); Gomshall, viii.1895,

¹WHEELER, W. M., 1923, *Social Life Among the Insects*, Harcourt Bruce & Co., New York, pp. 195-235.

— 1928, *The Social Insects*, Kegan Paul, London, pp. 246-272.

²DONISTHORPE, H. StJ.K. D., *The Guests of British Ants*, Routledge & Sons Ltd., London, pp. xviii & 152-155.

EAB (BM); Abinger Hammer, 11.v.12, I instar larva, *EAB* (BM); 19.x.40 ♂, *ECB* (NM); Chilworth (St. Martha's), 16.v.31, *FJC* (1/1931-32, 56); Guildford, 19.viii.45 and 29.viii.42, *LCB* (MM); and The Hog's Back, 7.xii.50, in old strawstack, *GBR* (45).

BUCKS. On the boundary at Datchet, 5.viii.52, in gravel pit, *GEW* (40); Slough (ICBFS), 4.viii.33, at base of grass stem *WHG* (41); 15.ix.34, on dry stem of *Rumex* sp., *WHG* (41); (PILG) viii.61, *GEW* (40); (Upton Court Road, waste plot), 1953-54, *GEW* (33d); and beyond the boundary at Taplow, 23.vii.52, disused sand-pit N. of railway station, probably preying upon larvae of *Coriomerus denticulatus*, *GEW* (EMM 88, 255).

Himacerus apterus (Fab.)

Sp. 182, p. 166

D&S p. 549 (*Nabis brevipennis*) S p. 166 (*N. brevipennis*)

B p. 269 (Sp. 186, *N. apterus*)

Common and widely distributed throughout the London area. This predator inhabits trees mainly deciduous though sometimes conifers as well. The larvae become adult from mid-July to mid-August and although usually micropterous macropters are occasionally met with.

MIDDX. Hounslow Heath, 1953, several beaten from *Alnus* north of the main road, *GEW* (33c); Ruislip, 6.viii.44, *CHA* (17); Ruislip N.R., adults beaten from *Crataegus* on 1.ix.55 and 9.ix.58, and various instar larvae taken as follows: V (24.vii.56, 29.vii.55 and 29.vii.58), IV (24.vii.56), and III (27.vi.55 and 18.vi.57), *EWG* (24) and (49).

HERTS. Bricket Wood Common, 3.vii.56, III and II instar larvae, *EWG* (24); Hadley Wood (N. of Barnet), 25.vi.44, *CHA* (17); n.d., IV instar larva, *EAB* (BM); Wormley Wood, 10.viii.41, *HWJ*; on the boundary at Chorley Wood, 1.viii.54, *WJLeQ* (21); and Chorley Wood Common, 29.ix.63, *PSB* (16); and beyond at Berkhamstead, ix.34, on *Crataegus*, *DCT* (12); Wymondley, *EAB* (11); and Royston, 30.v.14, I instar larva, *EAB* (BM).

ESSEX. Epping Forest, ix.1892, vii.1893 and ix.1898, *EAB* (BM); 7.x.62, *PSB* (16); (Lords Bushes), on oak and birch, *CN* (35a); (Loughton), common, *CN* (35a); (Fairmead), *CN* (35a); (Chingford) ix.07, 11.ix.11, and 22.vi.11 (II instar larva) and 8.vii.11 (II and III instar larvae) *EAB* (BM); Buckhurst Hall, 18.viii.25, *EAB* (BM); and beyond the boundary at Galleywood Common, viii.53, *JHF* (42).

KENT. Lee, *WW* (4) and (22); Darenth, *TAM* (37), (4) and (22); Darenth Wood, (exhibited 13.xi.43), a ♂ found attacking an ichneumonid *Pimpla inquistitor* Scop. ♀ taken in a curled aspen leaf, *SW* (1/1943-44, 22); 6.vii.55, III and II instar larvae, *EWG* (24); 7.ix.63, one ♂ and two ♀♀ swept from hazel, etc., *AAA* (51); Swanscombe, *HKK* (22); Bexley, 15.ix.02, *HStJKD* (HD); Bromley, ix.1887, *ES* (HD) (37), (4) and (22); Fawkham, 11.ix.54, *GGES*; Farningham Wood, 23.ix.51, *SL* (1/1951-52, 82) and (22); Farnborough, 23.ix.51 (exhibited 27.x.51), *SW* (1/1951-52, 43-44) and (44); Eynsford, 14.ix.52, in woods above village, *SW* (1/1952-53, 87) and (44); Otford, 18.ix.55, *KCS* (14); Wrotham, 5.ix.60, *KCS* (14); and beyond the boundary at Cliffe, 23.vii.54 and 30.viii.64, *KCS* (14); Chartham, 30.viii.59, *SW* (44); and Ryarsh, 25.ix.34, *LCB* (MM).

SURREY. Wimbledon Common, viii.1880, *ES* (HD) (36), (37) and (4); Cheam (Nonsuch Park), 13.viii.54 adult ♂ and V instar larva, and 22.vii.55, IV instar larva, *EWG* (24); Riddlesdown, 4.ix.54, dislodged from *Juniperus*, *SW* (44) and (1/1954-55, 13 and 93); 12.vii.58, III instar larva, *EWG* (24); Reigate, *ES* (36); Headley Lane, *TRB* (37) and (3);

Boxhill, 27.viii.50, a macropterous ♀, "only two previous records of macropterous form are known", *DL* (SL) and (1/1950-51, 36 and 77); 2.x.55, *EWG* (24); Ranmore Common, 18.viii.57, *DO* (HD); Norbury Park, 26.viii.57, *DO* (HD); Claygate, *JAP* (BM); Bookham Common, viii and ix, abundant on many species of trees in Central Wood, *DL* (34); *DL* (SL); adults taken on 10.viii.58 ♂, 16.viii.53, 16.viii.55 ♂♂ and ♀♀, 27.viii.55 ♂ and ♀♀, 9.x.55 ♂ and ♀♀ and 14.x.56 ♂, and a V instar larva on 10.viii.58, *EWG* (24); 12.viii.42, *LCB* (MM); 26.ix.64, a single ♀ by sweeping, *AAA* (51); vii.62, *DC* in *AAA* coll. (51); Oxshott Heath, 2.ix.51, *DL* (SL); 21.viii.54, *EWG* (24); Esher Common, 4.viii.55, adult and III instar larva, and 21.viii.54, adult, *EWG* (24); Ockham Common, 11.viii.62, IV instar larva, *SW* (44); Weybridge, *TRB* (37) and (3); and beyond the boundary at Woking, *ES* (36); Byfleet, 8.ix.35 numerous on oak, *FJC* (1/1935-36, 28); Ash Vale, 10.ix.50, including a macropterous ♀ in cop. with normal ♂, *DL* (SL) and (1/1950-51, 36 and 80); Chilworth, 6.viii.55, *SW* (44); and Guildford, 7 and 9.ix.41 ♂ (micropterous) and 22.viii.41 ♂ (macropterous), *ECB* (NM).

BUCKS. On the boundary at Slough (PILG), ix.54, on *Corylus avellana*, *GEW* (40); and beyond at Amersham, 7.vii.51, larvae, *WJLeQ* (21); and Burnham Beeches, 10.ix.07, *COW* (BM).

Stalia major (Costa)

Sp. 183, p. 167

D&S p. 554 (*N. flavomarginus*) S p. 167 (*N. major*)

B p. 276 (Sp. 188, *N. major*)

Though locally common this bug is not so often met with as other Nabids as it is a ground loving species and seldom ever taken by sweeping. It favours dry grassy places on heaths, commons, etc. The species overwinters as eggs which hatch in May and the larvae pass through their instars during that and the following two months becoming adult from end of June until late August.

MIDDX. Buckingham Palace grounds, viii. and ix.61, amongst litter in N.W. corner, *TRES* (52); Hendon (Scratch Wood), 23.vii.60, *DL* (HD); Tottenham, N.17, 19.xi.25, *JW* (BM); St. John's Wood (Finchley Road) N.W.8, 24.vii.50, *DL* (SL); Hampstead Heath, 27.viii.49, *DL* (SL) and (1/1949-50, 36-38); Finchley, 14.vii.43, *CHA* (17); Heston, 17.viii.42, *HStJKD* (HD); Hounslow Heath, 1952, very abundant beneath *Calluna* on the Heath, and frequent elsewhere, *GEW* (33b).

HERTS. "Abundant and widely distributed", *DCT* (12); Rickmansworth, *EAB* (11); 3.ix.49, *DL* (SL); on the boundary at Chorley Wood, viii.16, V instar larva, *EAB* (BM); 29.ix.63, *PSB* (16); and beyond at Wymondley, viii.1880, *EAB* (BM) and (11); Harpenden, 7.ix.54, *GGES* (HD); and Royston, 28.v.12 and 7.vi.19, II instar larvae on both dates, *EAB* (BM) and (11).

ESSEX. Waltham Abbey, 1963, *PSB* (16); Epping Forest, 16.ix.63, *PSB* (16); (Hale End), 18.ix.21, on grass in garden, *CN* (35a); (Sewardstone Green), 29.viii.25, by sweeping grass, *CN* (35a); and beyond the boundary at Benfleet, 15.ix.57, *DL* (SL); Writtle, viii.53, *JHF* (42); and Danbury Common, viii.53, *JHF* (42).

KENT. Lee, 1901, *WW* (39), (4) and (22); Lewisham, 1901, *WW* (39), (4) and (22); Kidbrook, 1901, *WW* (39), (4) and (22); Blackheath, 3.xi.1894, *AJC* (HD); (garden at 63 Blackheath Park) viii-x, not uncommon in grass-litter etc., *AAA* (51); 20.vii.64, two larvae at roots of *Achillea millefolium*, *AAA* (51); Swanscombe, *HKK* (22); 12.vii.64, *PSB* (16);

Longfield, 30.viii.64 and 3.ix.64, *GGES* (46); Fawkham, 25.ix.53, *GGES* (HD); Otford, 4.x.21, *HStJKD* (HD); *AAA* (22); 5.xi.61, *KCS*; and on the boundary at Gravesend, 16.viii.51, by sweeping tall dry dead grass, *TRES* (13).

SURREY. Banstead Downs, 10.viii.62, *DC* in *AAA* coll. (51); Purley, *JAP* (BM); Epsom Common, 6.ix.53, *EWG* (24); Ashted Common, 28.ix.46, *FJC* (1/1946-47, 77); Bookham Common, viii, *DL* (34); 20.x.63, *PSB* (16); Boxhill, 31.viii.36 ♂, *ECB* (NM); Ranmore, 15.x.50, *SL* (1/1950-51, 82); Oxshott Heath, 2.ix.50, *DL* (1/1950-51, 79); 12.vii.52, *SL* (1/1952-53, 84); 24.viii.52, *WJLeQ* (21); 28.vii.57, *GGES* (HD); 13.ix.60, *MA* (HD); 15.ix.63, one under *Calluna*, *AAA* (51); Weybridge, 30.vi.63 and 22.ix.63, *PSB* (16); and beyond the boundary at Woking ix.1888, *ES* (HD); 4.xi.20, *HStJKD* (HD); Chobham, ix.1882, *EAB* (BM); 16.vii.33 ♂ and 30.viii.36 ♂, *ECB* (NM); Farley Heath, nr. Albury, 31.vii.30 ♀, *ECB* (NM).

BUCKS. On the boundary at Slough (ICBFS), 14.vii.33, at roots of grass, *WHG* (41); (PILG), various dates, *GEW* (40); and beyond at Little Chalfont, 29.vii.54, *WJLeQ* (21); and Chalfont St. Peter, vii.25 (adult) and 17.vii.25 (V instar larva), *EAB* (BM).

Stalia boops (Schiödte)

Sp. 184, p. 167

S p. 168 (*Nabis boops*) B p. 277 (Sp. 189, *N. boops*)

Occasional. Also to be found, like the previous species, on dry grassy areas on heaths, commons, and downland. Seldom taken by sweeping for as with *S. major* it keeps to the ground, frequenting grass roots and bases of tussocks. Adults occur from mid-July until late September. The brachypterous form is the most usual; macropters are considered rare in this country. Herts., Essex and Kent records wanting.

MIDDX. Hounslow Heath, 1952, eleven specimens taken between July and October, seven of which were beneath *Calluna*, three under grass tufts on gravel mounds; and one under *Galium* and *Rumex*, *GEW* (33b).

HERTS. Beyond the boundary at Harpenden, 1 and 2.viii.38, *BSW* in *PH* coll. (BM).

SURREY. Bookham Common, 30.vii.51, swept in rank grass, *DL* (SL) and (1/1951-52, 13); vii, occurs sparingly in the long grass of Eastern Plain, *DL* (34); 25.vii.64, *PSB* (16); Oxshott Heath, 12.vii.52, *SL* (1/1952-53, 84); Esher Common, n.d., *WW* (1/1908-09, 69); *JAP* (BM); and beyond the boundary at Chobham, 1.viii.60, *GEW* (40); Gomshall, viii.1899, *EAB* (BM) (3) and (38); 11.viii.44 ♀, *ECB* (NM); Abinger viii.1899 and viii.1900, *EAB* (BM); and Wescott, 30.vi.35, on downs above village, n.c. (but probably *WEC*), (BM).

BUCKS. On the boundary at Slough (ICBFS), 30.vii.34, rare macropterous form, at roots of grass, *WHG* (BM) and (41); (PILG), 9.ix.53, *GEW* (40); and beyond at Burnham Beeches, 24.vii.54, V instar larvae, *WJLeQ* (21); and Coombe Hill, 2.viii.54 (macropterous adult) and 11.vii.54 (V instar larvae), *WJLeQ* (21).

Dolichonabis limbatus (Dahlb.)

Sp. 185, p. 168

D&S p. 551 (*Nabis limbatus*) S p. 169 (*N. limbatus*)

B p. 279 (Sp. 191, *N. limbatus*)

Common and widely distributed throughout the London area, in rank grass on commons, heaths, waste places, downs, and specially in damp meadows. The species hibernates in the egg stage. Larvae hatch from the eggs by mid-May and pass through 4 instars only (cf. all other

British Nabids which have five), becoming adult from early July onwards.

MIDDX. Hampstead Heath (Jack Straws), 27.vi.49, *DL* (SL) and (1/1949-50, 36-38); Mill Hill, 15.viii.58, *DL* (SL); Ruislip, 1.ix.63, *PSB* (16) Ruislip N.R., adult ♂♂ and ♀♀ taken on 24.vii.56, 29.vii.55, 1.ix.55 and 19.ix.56 (♀ only), and various instars as follows, IV (24.vii.56 and 1.ix.55) and III (27.vi.55 and 29.vii.55), *EWG* (24) and (49); Uxbridge, 23.viii.64, *PJLR* (MM); and Hounslow Heath, 1952. a few specimens taken from grassy areas, *GEW* (33b).

HERTS. "Common and widely distributed, occurring in similar situations to *N. flavomarginatus* but also in very wet marshy spots where that species never occurs", *DCT* (12); Rickmansworth, 1.viii.48, *DL* (SL); Aldenham, 23.vii.61, *DL* (HD); Elstree, 16.vii.44, *CHA* (17); Hatfield, 19.vii.64 and 14.ix.63, *PJLR* (MM); Barnet, viii.1885, *EAB* (BM); Bricket Wood Common, 3.vii.56, III instar larva, *EWG* (24); and on the boundary at Chorley Wood, *EAB* (11); Chorley Wood Common, 29.ix.63, *PSB* (16); and beyond at Berkhamstead, 14.x.62, *PSB* (16); and Harpenden, 25.viii.54, *GGES* (HD).

ESSEX. Epping Forest, generally distributed on grass and other herbage, *CN* (35a); 16.ix.63, *PSB* (16); (Chingford), ix.1891 and ix.07, *EAB* (BM); (Loughton) 30.vii.50, *DL* (SL).

KENT. Lee, *JAP* (BM); Kidbrook, 1903, *WW* (39), (4) and (22); Charlton, *AAA* (22); Swanscombe, 12.vii.64, *PSB* (16); Darenth Wood, 6.vii.55, III instar larva, *EWG* (24); Dartford, *AMM* (22); Farningham Wood, 23.ix.51, *SL* (1/1951-52, 81) and (22); Downe (Darwin's Bank), 15.ix.62, *KCS* (14) and (22); on the boundary at Gravesend, 17.viii.30, *KCS* (14) and (22); on the boundary at Gravesend, 17.viii.30, ♀ *ECB* (NM); 22.vii.52, *GGES* (HD); and beyond at Addington, *KCS* (22).

SURREY. Wimbledon Common, 25.vi.55, III and II instar larvae, *EWG* (24); Banstead Downs, 23.viii.55 ♀ and 5.vii.57 (IV instar larva) *EWG* (24); Banstead (Yew Tree Bottom Road, Gt. Burgh), 5.vii.57 (IV instar larva) *EWG* (24); Cheam (Nonsuch Park), 8.vii.55 (IV instar larva), 13.viii.54 (adult ♀) and 22.viii.55 (adult and IV instar larva), *EWG* (24); Chipstead, 19.ix.09 ♀, *ECB* (NM); Claygate, *JAP* (BM); Boxhill, 22.ix.51, *DL* (SL); 2.x.55, *EWG* (24); Bookham Common, adults ♂♂ and ♀♀ taken from mid-July-mid-October, 1953-58 and various instars as follows IV (8.vii.56 and 10.vii.55) III (14.vi.53, 21.vi.55, 8.vii.56, 10.vii.55, 14.vii.55 and 19.vii.53), I (13.v.56, 14.vi.53 and 8.vii.56), *EWG* (24); vii, viii, ix, *DL* (34); 20.x.63, *PSB* (16); Oxshott Heath, 20.iii.51, *DL* (SL); 4.viii.55, IV instar larva, *EWG* (24); Esher Common, 4.viii.55 and 21.viii.-54; Weybridge, 22.ix.63, *PSB* (16); and beyond the boundary at Woking, viii.1890 and ix.1888, *ES* (HD); Horsell Common, *JAP* (BM); 3.ix.33 ♂ and 5.viii.33 ♂ (both micropterous) and 4.x.36 ♀ (macropterous), *ECB* (NM); Chobham, 22.vii.33 ♂ and ♀ and 5.viii.33 ♀, *ECB* (NM); 27.vi.59, Chobham Common, a single macropterous ♀ swept from *Juncus* in a damp patch on the outskirts of the Common, *GEW* (EMM 96, 13); Ash Vale, 10.ix.50 and 8.ix.51, *DL* (SL); Holmbury St. Mary, viii.1892, *EAB* (BM); Shalford, viii.1888, *EAB* (BM); and Shere, viii.1892, *EAB* (BM) and (HD).

BUCKS. On the boundary at Slough, 15.vii.59 a macropterous ♀ in a swamp, *GEW* (40) and (EMM 96, 13); (ICBFS), 24.ix.34, at roots of grass, *WHG* (41); (PILG), 14.vii.53, *GEW* (40); and beyond at Chalfont St. Peter, 17.viii.25, IV and I instar larvae, *EAB* (BM); Stoke Common, 17.viii.52, *WJLeQ* (21); and at Coombe Hill, 15.ix.63 and 21.x.62, *PSB* (16).

Dolichonabis lineatus (Dahlb.)

Sp. 186, p. 169

S p. 170 (*Nabis lineatus*) B p. 281 (Sp. 192, *N. lineatus*)

Rare and local. Occurs in marshy situations at the bases of sedges, rushes and reeds. It has also been found beneath *Chenopods* on some saltmarshes and should therefore be searched for in those few that are left in N. Kent and S. Essex that lie within the London area. The adults are found from mid-July until September.

KENT. Lee, *JAP* (BM); Milton near Gravesend [actually nearer Swanscombe] n.d. *WW* (1/1911-12, 52); and beyond the boundary at Cliffe, *AMM* (22); Leybourne, *WRD* (22), and East Malling, *AMM* (22).

SURREY. Oxshott Heath, *TRB* (37) and (3); and beyond the boundary at Chobham, viii.1876, in a marshy place by sweeping, *ES* (HD) (36) and (3); *JAP* (BM); ix.1882, *EAB* (BM).

Prostemma guttula (Fab.) Foreign species

p. 196

D&S p. 546 (*Metastema guttula*)

S p. 164

B p. 268 (Sp. 185)

This very rare alien has only been taken on four occasions in Britain and all are old records. One of these was from N. Kent but the specimen was taken at least 100 years ago. It is considered unlikely that it is now anywhere established in this country.

KENT. Charlton, (before 1865), *EWJ* (28), (36), (37), (38), (4) and (22).

(End of Part III)

A Review of the Macrolepidoptera of the London Area for 1964 and 1965

By C. G. M. DE WORMS, M.A., Ph.D., F.R.I.C., F.R.E.S.

SINCE my last biennial review of London macrolepidoptera for the years 1962 and 1963 (*Lond. Nat.*, 43, 26-33, July 1964) there have appeared two important publications bearing on this subject. As a special part of their Proceedings for 1963 the South London Entomological and Natural History Society produced in December 1964 a complete survey of the flora and fauna of the garden of Buckingham Palace. This contained a list of lepidoptera captured in a moth-trap run from June 1960 for nearly four years during the spring and summer months. So many species of interest were recorded, of which no less than 37 were new to the INNER LONDON region, that I considered it of the utmost interest and importance to compile a special analysis of the results which appeared in the *London Naturalist* (44, 77-81, July 1965). This trap has continued to be run also during 1965 so that several more insects new to this part of London have been added and will be dealt with under the regional areas. The second paper of special note is Mr. Alan C. Jackson's Macrolepidoptera of the South Herts. Plateau (*Lond. Nat.*, 44, 73-76). In his survey he has selected a number of species taken during the past few years, many of which will command special attention and comment in this review.

In April 1965 when the Greater London Council took office, many changes were made not only in the outline of London Boroughs, but also in some of the boundaries of counties in the London Area, especially in the Northern region. For instance the "bulge" of Middlesex round Hadley Wood and Enfield Chase is now absorbed into Hertfordshire. But for the purpose of London's natural history records, where continuity is of paramount importance, the Watsonian Vice-counties will continue to be used, so that for instance records for Potter's Bar will still be shown under MIDDLESEX (V.-c.21).

Before discussing and evaluating the various records, a survey of the general weather conditions for the two years under review is important to see how they may have affected the prevalence of the lepidoptera over the British Isles in each of the respective seasons.

The year 1964 was on the whole a good and quite productive one and its main feature was the remarkable spell of fine weather which started in the middle of July and went on almost without interruption through August and September into the beginning of October. This warm weather fostered the breeding up of larvae of *Pyrameis atalanta* L. (the Red Admiral) and of *P. cardui* L. (the Painted Lady), the progeny of a fairly large immigration during May. The result was that both these species appeared in quite phenomenal numbers during the late summer, especially the Red Admiral. In many parts of Southern England, including the London Area, it was possible to see dozens of these fine butterflies jostling each other to get at the spikes of buddleia bushes. There has seldom been such an amazing year for these Vanessaids, since *Aglais urticae* L. (the Small Tortoiseshell) was also very abundant at this period. Some other migrant species were well to the fore during 1964, notably *Colias croceus* Fourc. (the Clouded Yellow) of which quite a number found their way into the Area, while the early autumn saw quite an influx

of *Herse convolvuli* L. (the Convolvulus Hawk). But perhaps the most surprising arrivals apparently from abroad were a number of *Enargia paleacea* Esp. (the Angle-striped Sallow), two of which were captured within the London region in mid-August, one at Reigate and the other in the north-west of the Metropolis. Only four old records are extant for the Area of this normally northern insect which invaded the eastern counties and south-east England ranging as far as Wiltshire at this period of 1964.

The general weather and lepidoptera during 1965 are a very different story, since virtually there was no prolonged warm period throughout the year which provided one of the poorest summers since the War. Butterflies on the whole were very lean with hardly any of the normal migrants, not even among the moths. Towards the end of May, however, there was a very definite sporadic, but limited immigration, mainly of *Laphygma exigua* Hübn. (the Small Mottled Willow) and *Celerio livornica* Esp. (the Striped Hawk). At least one of the latter was taken in the Area at this time of the year on the southern outskirts of London. Not even an exceptionally warm October seemed to attract the customary autumn migrant hawkmoths.

Before analysing the respective Vice-county records, some of the more notable captures for the two years are worthy of special treatment, including a few very surprising ones that have been discovered from the immediately preceding years. While going through the Pugs in the collection of Professor J. V. Dacie recently, I noticed one that seemed out of place in a series of *Eupithecia arceuthata* Freyer (the Cypress Pug). The specimen in question was taken at Wimbledon at light July 16, 1961. On taking it to the Natural History Museum at South Kensington it was identified as *Eupithecia millefoliata* Rössler (the Yarrow Pug) apparently new to the London Area. This small moth was only recognised as British in 1947 since when it has been found to exist quite commonly mainly in coastal areas from Kent to Hants. and also in Essex. Its characteristic notched larvae is quite easy to find in the autumn feeding on the dead yarrow heads. It has probably been with us for a long time, since so far the earliest extant capture was made by myself in East Kent in 1934 and the specimen remained unidentified in my collection for just over 20 years. It is most interesting that this species should have penetrated into the Area.

Another most outstanding capture also by Professor Dacie on Wimbledon Common on April 12, 1964 was an ab. *luteata* Hennin of *Archiearis parthenias* L. (the Orange Underwing) in which the normal orange of the hindwings is replaced by yellow, a very rare form for which Wimbledon has been the classic locality. Yet a further most spectacular visitor to the southern fringe of the Area was an example of *Catocala fraxini* L. (the Clifden Nonpareil) taken near Reigate by Mr. D. Trembath on September 22, 1965. The last apparent Area record for this grand moth was at Walton-on-Thames in 1937. On September 16, 1963 Mr. B. Wurzell found a specimen of *Cirrhia ocellaris* Borkh. (the Pale Lemon Sallow) in Finsbury Circus, a most unexpected spot to locate this very local species, though one of its main habitats is just to the south of the Metropolis and westwards along the Thames Valley to Windsor. It is likely to have bred on the spot as it was found at rest on a poplar trunk. Its larval pabulum in the early stages is the poplar catkins. Besides *Enargia paleacea* Esp. there were too several other probable migrants of

the less regular species. A *Meliana flammea* Curtis (the Flame Wainscot) was taken by Mr. E. J. Hare at Pinden near Dartford in late May, 1964, a most extraordinary locality for this fen species. A few others were recorded at the same period in Southern England, well outside their normal habitat. The only somewhat uncertain one for the Area is an example reported from Lewisham in 1829. That fine noctuid *Eurois occulta* L. (the Great Brocade) was recorded from North Wembley in August, 1964 by Mr. M. G. Mason (*vide Ent. Record*, 76, 267). It was last noted for the Area at Mill Hill in 1948. Mr. R. G. Châtelain reports a female of that fine Arctiid moth *Lithosia quadra* L. (the Large Footman) at Orpington in August, 1965, and Sir Eric Ansorge took a male at Chalfont St. Peter in October, 1965. There have only been nine other records for this moth for the Area and these are the first for Kent and Bucks. That fairly regular little migrant geometer *Rhodomestra sacraria* L. (the Vestal) was taken in the south-east part of London by Mr. C. G. Bruce in 1964, and another that year at Scratch Wood. Some localised species appear to be spreading their range through the region. One is *Hadena compta* Fab. (the Varied Coronet) which was first noted in the Area in 1963 from Norwood, has now been taken on the eastern boundary near Brentwood and also as early as 1962 at Potter's Bar as reported by Mr. Alan Jackson. Sir Eric Ansorge's trap at Chalfont St. Peter has attracted an *Ennomos autumnaria* Wernb. (the Large Thorn) in 1964, the first record of this large moth from the western half of the Area (*vide Ent. Gazette*, 16, 42).

Again there seems evidence of the steady ascendancy of melanic forms in the Area. Mr. A. A. Myers reports ab. *nigro-brunnea* of *Xylocampa areola* Esp. (the Early Grey) from north-west London at Kingsbury, also melanic examples of both *Cryphia perla* Fab. (the Marbled Beauty) and of *Apatele megacephala* Fab. (the Poplar Grey) from that district. At Scratch Wood he took ab. *obscura* of *Bombycia viminalis* Fab. (the Minor Shoulder-Knot). Mr. C. G. Bruce says that at Lee in May 1965 he saw no less than seven ab. *nigra* of *Gonodontis bidentata* Clerck (the Scalloped Hazel) out of a total of twenty-eight of this insect equivalent to a proportion of 28%, whereas he usually sees only one or two a year.

Coming now to the review of records for 1964 and 1965 for each of the Vice-county regions, as before a species marked with an asterisk denotes that it has not been noted previously in that particular area.

Certainly INNER LONDON (I.L.) commands a lot of attention what with the many additions to the Buckingham Palace captures from the light-trap in the garden there and also with several other most interesting observations.

That shade-loving butterfly *Pararge aegeria* L. (the Speckled Wood)* is not one that one would expect to meet in Lincoln's Inn Fields. Mr. D. Burrows saw one there on September 22, 1965 (*vide Ent. Record*, 77, 241). This is a first record for it for I.L. Mention has already been made of those two remarkable captures in the Central Area of an *Enargia paleacea* Esp. (the Angle-striped Sallow)* at Parkway on August 15, 1964 by Mr. J. S. Hopton (*vide Ent. Gazette*, 16, 114), also of a *Cirrhia ocellaris* Borkh. (the Pale Lemon Sallow)* in Finsbury Circus on September 16, 1963 by Mr. B. Wurzell (*vide Bulletin Amateur Entom. Soc.*, 24, 171). During 1965 the moth-trap in the garden of Buckingham Palace has once more attracted several species of the macro-moths not previously recorded there of which some are new to I.L. Among these is *Apamea sordida*

Borkh. (= *anceps* Hübn.) (the Large Nutmeg)* and another noctuid, *Leucania comma* L. (the Shoulder-striped Wainscot)*. A most unexpected geometer was *Philereme vetulata* Schiff. (the Brown Scallop) which had not been recorded from so near the central area since 1831, when one of this moth was taken at Fulham. Another buckthorn feeder was *Triphosa dubitata* L. (the Tissue), a female of which was caught at Bush House in the Strand on September 22, 1965. Two of this species were obtained in the City in September, 1954. I am not aware of any *Rhamnus* growing in this part of London. Yet a further most unlikely insect to appear in the Palace garden was *Chiasmia clathrata* L. (the Latticed Heath)*, a denizen mainly of downland. A common noctuid to find its way also into the trap was *Conistra vaccinii* L. (the Chestnut)*, new, too, to INNER LONDON.

Several most interesting observations were made by Mr. G. H. Gush during 1964 in the Archbishop's Park at Lambeth. These include a male *Anthocharis cardamines* L. (the Orange-tip) on May 29, also two *Pyrameis cardui* L. (the Painted Lady) on September 11 and a *Polygonia c-album* L. (the Comma) there on September 28. A male *Celastrina argiolus* L. (the Holly Blue) was also seen there on September 11 as well as many *Pyrameis atalanta* L. (the Red Admiral). Again in 1964 Dr. T. Peet noted at Guy's Hospital *Catocala nupta* L. (the Red Underwing), *Naenia typica* L. (the Gothic), and *Eupithecia centaureata* Schiff. (the Lime-speck Pug), while at Newington Gardens in Southwark he saw on April 25, 1964 the normal form of *Hemerophila abruptaria* Thunb. (the Waved Umber).

MIDDLESEX under its Watsonian Vice-county boundaries provides a number of important records for both years. Once again Mr. B. R. Stallwood has made some striking observations on butterflies in a particular locality near Sunbury-on-Thames. It is remarkable to see the contrast between 1964 and 1965 and to appreciate how much in the former year numbers excelled for the special insects undergoing daily counts. For instance a single *Pyrameis cardui* L. (the Painted Lady) was seen on August 15, 1964, also fifteen *P. atalanta* L. (the Red Admiral) during September of that year whereas in 1965 neither of these two migrant butterflies appeared in that locality. *Polygonia c-album* L. (the Comma) of which eight were noted also in September 1964, was also absent in 1965. On the other hand *Vanessa io* L. (the Peacock) was appreciably more numerous there in the summer of 1965 than in 1964. There was not much difference in the relative numbers of *Pieris brassicae* L. (the Large White) or of *Pieris rapae* L. (the Small White) in either season nor of *Aglais urticae* L. (the Small Tortoiseshell).

Mr. A. A. Myers reports a very good night for light in Scratch Wood on July 17, 1964 when the harvest included two *Dicycla oo* L. (the Heart Moth), single specimens of *Amathes ditrapezium* Borkh. (the Triple-spotted Clay), *Parastichtis suspecta* Hübn. (the Suspected) and *Apatele tridens* Schiff. (the Dark Dagger), none of which have many records for M.21. *Cosmia pyralina* View. (the Lunar Pinion) was another very welcome and none too common visitor, while the star of the harvest was an example of *Rhodometra sacraria* L. (the Vestal), that very sporadic migrant which has visited the Area on a number of occasions. Reference has already been made to the increase of melanic specimens among a number of species observed by Mr. Myers in Kingsbury, also to the capture of an *Eurois occulta* L. (the Great Brocade) at North Wembley by Mr. M. G. Mason in August 1964.

At Mount Vernon Hospital, Northwood on November 1, 1965 Dr. T. Peet noted *Pocciolocampa populi* L. (the December Moth), also *Brachionychia sphinx* L. (the Sprawler), neither with many recent records in the Vice-county.

Returning to Mr. Alan Jackson's paper (*London Naturalist*, 44, 73) and reviewing his subsequent records for 1965 from Potter's Bar, his most notable capture was a *Cryphia muralis* Forst. (the Marbled Green) on July 28, 1962 and another there in 1965. The only previous record of this insect for M.21 was from Harrow about 1898. *Hadena compta* Fab. (the Varied Coronet)* was taken by him there on July 23, 1962, new to MIDDLESEX and antedating the first record for the Area, noted in 1963. The species reappeared in 1965, thereby indicating its increasing spread throughout the Area and Great Britain. Some other captures of special interest at Potter's Bar include *Drepana binaria* Hufn. (the Oak Hook-tip) in 1962 and 1964, also *Trichiura crataegi* L. (the Pale Oak Eggar) in 1964, *Polia nitens* Hufn. (the Pale Shining Brown) in 1962, *Lycophotia varia* Vill. (the True Lover's Knot) in 1962 and 1964, *Spaelotis ravida* Hübn. (the Stout Dart) in 1965, two *Orthosia populeti* Treits. (the Lead Coloured Drab) in early April, 1965 and *Lygephila pastinum* Treits. (the Blackneck) in July 1964. In connection with this last-named species the reference in Mr. Jackson's paper to one taken at Hounslow by Mr. Pierce is erroneous, as he has never seen it there. In my review (*London Naturalist*, 1961) the example quoted was taken at Feltham by Mr. Classey. Among geometers not previously observed in this part of M.21 are *Electrophaes corylata* Thunb. (the Broken-barred Carpet), *Lobophora halterata* Hufn. (the Seraphim), *Hydriomena coerulata* Fab. (the May Highflier), all in 1965, also *Thera juniperata* taken in October 1964 which has only one other record for the Vice-county, from Whitton.

Some further interesting records come from HERTS. (H.20), where in 1964 Mr. R. I. Lorimer took at Totteridge *Sterrha rusticata* Fab. (the Least Carpet)*, quite new to this region and apparently to this part of the Vice-county as also was an example of *Philereme vetulata* Schiff. (the Brown Scallop)*, while there is only one other record for *Eupithecia arceuthata* Freyer (the Cypress Pug). He also noted two *Apatele alni* L. (the Alder moth) there on May 30 of that year which was virtually a record one for this species.

Unfortunately Mr. P. Ward who has provided so many most valuable records from Whetstone, had little opportunity of running his trap during both 1964 and 1965. However, a most notable capture there was *Parascotia fuliginaria* L. (the Waved Black) on July 16, 1964. The only others of this very elusive little insect for H.20 are three from Arkley in 1954 and 1957.

Mr. Barry Goater has sent in a most comprehensive list of some 240 species of the Macros taken at his mercury vapour light at Bushey in 1965, but naturally there is scope here for only a comparatively small selection of this most interesting survey for a single locality, in the Area, covering one season. *Spaelotis ravida* Hübn. (the Stout Dart) is always a worth-while capture, with one seen on August 23 and a female on September 5. This sporadic insect was apparently fairly numerous in the Eastern Counties at this period and has had a number of records in the Area over the years. Several *Polia nitens* Haworth (the Pale Shining Brown) appeared the first week in June, seldom a numerous species, while a single *Eumichtis adusta* L. (the Dark Brocade) was seen on May 26,

also never common in this region. 1965 was a particularly good year for that small noctuid *Procus literosa* Haworth (the Rosy Minor) which first turned up at Bushey on August 22, and for which there are not many records for H.20. A single *Caradrina ambigua* Fab. (Vine's Rustic) came to light on August 3, also a rare insect in this part of the Area. In the spring that common species *Orthosia gothica* L. (the Hebrew Character) produced a very scarce form ab. *circumsignata* with the black mark on the forewings in the form of a circle. *Orthosia advena* Schiff. (the Northern Drab) appeared as a female of the dark form on May 6. Among the geometers a visitor of note was *Selenia lunaria* Schiff. (the Lunar Thorn) on June 4, never a common insect. In Whippendell Wood, near Watford on May 23 Mr. Goater took several *Notodonta anceps* Goeze (the Large Prominent) of which there are apparently very few records for this part of HERTS. Also at Elstree in the spring he beat from a single buckthorn bush a number of larvae of the two geometers, *Philereme transversata* Hufn. (the Dark Scallop) and of *P. vetulata* Schiff. (the Brown Scallop)*, the latter new to H.20, as already indicated.

SOUTH ESSEX (E2.18) has received very little notice in previous reviews, since unfortunately so few collectors have sampled that region in recent years. I was, therefore, most grateful to receive from Mr. K. W. Grimwood another most interesting list of captures made during 1963 and 1964 on the eastern fringe of the Area from Ingrave near Brentwood whence he also reports just on 240 species of the macros. No less than 14 are apparently *new* to this part of the Vice-county together with a number of which very few records come from this region. Among the more significant Hawk-moths are *Sphinx ligustri* L. (the Privet Hawk) and *Deilephila porcellus* L. (The Small Elephant), while the Notodonts include *Stauropus fagi* L. (the Lobster), *Cerura fircula* L. (the Sallow Kitten) and *Clostera curtula* L. (the Chocolate-tip)*, the last not reported before for E2.18. *Tethea ocularis* L. (the Figure of Eighty) has only been noted from the Epping Forest area, while that widespread insect *Achlya flavicornis* L. (the Yellow Horned)*, also on the list from Ingrave is not on that for E2.18 hitherto. Among the *Lasiocampidae* (Eggars) rare species include *Trichiura crataegi* L. (the Pale Oak Eggar) and *Lasiocampa quercus* L. (the Oak Eggar), only recorded earlier from Loughton and Ilford respectively. A most surprising insect to find in this area is *Diarsia dahlia* Hübn. (the Barrel Chestnut)* of which there are only a handful of records for the London region, mostly from the last century. The appearance of *Hadena compta* Fab. (the Varied Coronet)* in this district is of particular note, while *Hadena genistae* Borkh. (= *w-latinum* Borkh.) (the Light Brocade)* and *H. lepida* Esp. (the Tawny Shears)* had not been seen before so far east in the Area. *Aporophyla lutulenta* Borkh. (the Deep Brown Dart)*, *Cucullia verbasci* L. (the Mullein)* and *Graptolitha ornithopus* Hufn. (the Grey Shoulder Knot)* are also apparently all newcomers to the list for E2.18 as also are *Pyrrhia umbra* Hufn. (the Bordered Sallow*) and *Plusia pulchrina* Haworth (the Beautiful Golden-Y)*. Even *P. iota* L. (the Golden-Y) has only been noted previously from Chingford, so little has this portion of the Area been worked. But one of the most interesting of the noctuids to be on this list is *Nonagria sparganii* Esp. (Webb's Wainscott)*, seldom recorded far from coastal terrain. The geometers too provide some species of note, including a large number only reported before from the Epping Forest area, such as *Sterrhia trigeminata* Haworth (the Treble Brown-spot Wave),

Ecliptoptera silaceata Schiff. (the Small Phoenix), *Cidaria fulvata* Forst. (the Barred Yellow), *Ortholita mucronata* Scop. (the Lead Belle) and *Epirrhoë rivata* Hübn. (the Wood Carpet), *Anaitis plagiata* L. (the Treble-bar)* and *Euphyia unangulata* Haworth (the Sharp-angled Carpet)* are new to E2.18.

NORTH ESSEX (E1.19) seems to be a sort of Cinderella of the Area with only an occasional record. On the Epping Plain at the end of July 1965 Miss D. Woods reports *Polygonia c-album* L. (the Comma) and *Thymelicus sylvestris* Poda (the Small Skipper), also many *Pieris napi* L. (the Green-veined White).

As usual many valuable records are forthcoming from KENT (K.16) kindly supplied from several very experienced collectors. Among the most notable is the *Meliana flammea* Curtis (the Flame Wainscot) already referred to. It was taken by Mr. E. J. Hare at Pinden near Dartford in May 1964. The only other Area record for this very local marsh species was the original British specimen taken in Lewisham in 1829. Mention, too, has already been made of the female *Lithosia quadra* L. (the Large Footman)* captured by Mr. R. G. Châtelain at Orpington on August 13, 1965. He also reports *Apamea scolopacina* Esp. (the Slender Brindle) from Farnborough on July 26, 1964 when he also took *Colostygia didymata* L. (the Twin-spot Carpet) and *Abraxas sylvata* L. (the Clouded Magpie). At Farningham Road on June 26 of that year he obtained an example of *Xanthorhoe quadrifasciaria* Clerck (the Large Twin-spot Carpet), never a common insect, while in October 1965 he found a number of larvae of *Perizoma bifaciata* Haworth (the Barred Rivulet) feeding in *Bartsia* near Crofton.

Reference has already been made to the *Rhodomestra sacraria* L. (the Vestal) taken by Mr. C. G. Bruce in his garden at Lee on September 9, 1964. He also reports from his light trap there *Leucoma salicis* L. (the White Satin) which was also common in 1964 and again in 1965 as also was *Tethea ocularis* L. (the Figure of Eighty) in both those years. In 1964 he noted three *Apamea unaninis* Hübn. (the Small Clouded Brindle) of which there are not many records for K.16, also in June 1965 two *Acontia luctuosa* Schiff. (the Four-spotted), that day-flying noctuid which seems to have got much scarcer in recent years. Apparently that tiny geometer *Sterrhia rusticata* Fab. (= *vulpinaria* H.-S.) (the Least Carpet) is quite abundant there annually.

Mr. M. Chalmers-Hunt in May 1964 beat near Wilmington several larvae of *Eupithecia inturbata* Hübn. (the Maple Pug) which produced imagines the following July. This insect was first recorded for K.16 from Eynsford in 1963. At Biggin Hill in May 1965 he beat numerous larvae of *Philereme vetulata* Schiff. (the Brown Scallop) from *Rhamnus catharticus*. From the Orpington district Mr. F. A. Swain records the relative abundance in 1964 of *Callophrys rubi* L. (the Green Hairstreak), *Erynnis tages* L. (the Dingy Skipper) *Pyrgus malvae* L. (the Grizzled Skipper) and in July of that year of *Thecla quercus* L. (the Purple Hair-streak) and *Thymelicus lineola* Ochs. (the Essex Skipper). In April 1964 he took *Eupithecia tripunctaria* H.-S. (= *albipunctata* Haworth) (the White-spotted Pug) and in June of that season *E. satyrata* Hübn. (the Satyr Pug)*, apparently new to K.16. Mr. P. Hawkey took at light in September 1965 *Gnophos obscurata* Schiff. (the Annulet). In June 1964 *Zygaena lonicerae* Esp. (the Narrow-bordered Five-spot Burnet) was obtained by Mr. Swain near Orpington and was also noted in 1965 at Westerham by Mr. Clifford Edwards.

From SURREY (S. 17) as usual come a good many records of note for the two years under review and during each of them Mr. B. Stallwood made an analysis of a number of species of the commoner butterflies in a special locality within a mile radius of Chessington Zoo between June 26 and September 19, 1964. He accounted for six *Pyrameis cardui* L. (the Painted Lady) as well as several *P. atalanta* L. (the Red Admiral) on eleven visits between July 27 and October 5. On July 7 there he counted nearly 100 *Maniola jurtina* L. (the Meadow Brown). On four occasions during July he noted at least ten each of *Thymelicus sylvestris* Poda (the Small Skipper) and of *T. lineola* Ochs. (the Essex Skipper), the latter species appearing in many new sites in SURREY. Throughout 1964 *Pieris rapae* L. (the Small White) and *P. napi* L. (the Green-veined White) were especially numerous as also was *Polyommatus icarus* Rott. (the Common Blue) in late August of that year. However in 1965 he only saw one each of the Painted Lady and Red Admiral, though *Vanessa io* L. (the Peacock) was commoner than in 1964. Nearly all the other species were in similar quantity to that of the previous year.

Mr. G. H. Gush also carried out a similar type of survey in 1964 in the vicinity of Weybridge. He saw as many as nine *P. cardui* L. on July 26 and on the previous day no less than 20 *P. atalanta* L. and four *Colias croceus* Fourc. (the Clouded Yellow) of which he noted a dozen there on August 20. The Red Admirals were about in numbers almost daily between this date throughout September and October up till November 7. Mr. Gush observed too considerable numbers of both *Aglais urticae* L. (the Small Tortoiseshell) and also the Peacock, but only a couple of *Macroglossa stellatarum* L. (the Humming-bird Hawk) throughout the summer period of that year.

Dr. I. Menzies reports on the relative abundance of various butterflies mainly along the downs on the southern fringe of the Area and also on their past and present status. Apparently *Aricia agestis* Schiff. (the Brown Argus) was very plentiful on the edge of Box Hill in 1964. *Cupido minimus* Fuessl. (the Small Blue) was common on Epsom and Banstead Downs that year which also saw *Lysandra coridon* Poda (the Chalk-hill Blue) flourishing in these areas. *Vanessa io* L. (the Peacock) was in great plenty also in 1964 round Surbiton together with a spate of larvae of *Sphinx ligustri* L. (the Privet Hawk) and of *Mimas tiliae* L. (the Lime Hawk) in that area. But he refers to the apparent great reduction in numbers of late of *Limenitis camilla* L. (the White Admiral) on Bookham Common and of *Argynnis cydippe* L. (the High Brown Fritillary) there and on Ashted Common. However, *Plebeius argus* L. (the Silver-studded Blue) is still maintaining itself near Cobham. He also beat a single larva in the spring of 1965 of *Strymonidia w-album* Knoch. (the White-letter Hairstreak) at the eastern end of Box Hill.

Reference has already been made to the *Eupithecia millefoliata* Rössler (the Yarrow Pug)* taken by Professor J. V. Dacie in July 1961 at Wimbledon, new to S.17 and to the whole Area, also to the yellow form of *Archiearis parthenias* L. (the Orange Underwing) obtained by him on Wimbledon Common on April 12, 1964. In May of that year he took *Panemeria tenebrata* Scop. (the Small Yellow Underwing) on the Common where it had not apparently been seen since 1928. An unexpected noctuid at Wimbledon was *Apamea sublustris* Esp. (the Reddish-Light Arches) captured there on June 28, 1964 and mainly a downland species.

Two outstanding captures by Mr. D. A. Trembath near Reigate have

been mentioned in the introduction. These are the *Enargia paleacea* Esp. (the Angle-striped Sallow)* taken in that vicinity on August 14, 1964, new to S.17 (*vide Ent. Record*, 77, 23) and the *Catocala fraxini* L. (the Clifden Nonpareil) also obtained in that region on September 22, 1965. Another most interesting record by him is that of a *Parascotia fuliginaria* L. (the Waved Black) on August 14, 1965. This little insect seems to be steadily extending its range in the Area. An *Apatele alni* L. (the Alder Moth) visited him on June 10, 1965 and a melanic *Crocallis elinguaris* L. (the Scalloped Oak) on August 14, 1964.

During the immigration of *Celerio livornica* Esp. (the Striped Hawk) at the end of May 1965 at least one was noted in the Area, taken by Mr. James Porter at Tolworth in that month. Other captures of note for S.17 include an *Erastris venustula* Hübn. (the Rosy Marbled) on Ashted Common on May 27, 1964 by Mr. W. G. Tremewan. This is a new locality for this elusive little moth which keeps on appearing in unexpected spots. Mr. A. Aston reports *Sterrha rusticata* Fab. (the Least Carpet) in July 1964 in his home at Dulwich where it was first reported by the late Canon Edwards in 1957. On July 26 of that year he also took three *Philereme transversata* Hufn. (the Dark Scallop), not often seen in that part of the outskirts of the Metropolis. Near Addington on September 27, 1965 Mr. Chalmers Hunt observed *Thymelicus lineola* Ochs. (the Essex Skipper) in good numbers at this late date of the season.

For BUCKS. (B.24) Sir Eric Ansorge has once more provided a most interesting list, mainly taken at his home at Chalfont St. Peter. His most important capture in 1964 was an *Ennomos autumnaria* Wernb. (the Large Thorn)* on September 1. Another very welcome visitor on the 5th of that month was *Herse convolvuli* L. (the Convolvulus Hawk)*, also new to B.24. Another species in this category was an *Aporophylla nigra* Haworth (the Black Rustic)* on October 7. There is apparently only one doubtful record for this insect for the whole County, while that little geometer *Euchoeca nebulata* Scop. (the Dingy Shell)* taken at Chalfont on July 18, 1964, was not even on the BUCKS. list (*vide Ent. Gazette*, 16, 42). Other captures there in 1964 included *Hyloicus pinastri* L. (the Pine Hawk), *Lophopteryx cucullina* Schiff. (the Maple Prominent), *Gypsites leucographa* Schiff. (the White-marked), *Odontesia carmelita* Esp. (the Scarce Prominent), *Orthosia miniosa* Schiff. (the Blossom Underwing) and *Zenobia subtusa* Schiff. (the Olive Kidney), all most uncommon visitors. *Cerura bifida* Hübn. (= *hermelina* Goeze) (the Poplar Kitten) had only one previous record there, in 1957.

For 1965 Sir Eric's most outstanding capture by far was a male *Lithosia quadra* L. (the Large Footman)* on October 6, a very late date for this probable migrant. Another insect new to B.24 was *Euxoa tritici* L. (the White-line Dart)* on August 18. Two new geometers were *Mysticoptera sexalata* Retz. (the Small Seraphim)* on June 14 and *Eupithecia indigata* Hübn. (the Ochreous Pug)* on May 21. Other uncommon visitors for 1965 were *Miltochrista miniata* Forst. (the Rosy Footman) and *Apamea ophiogramma* Esp. (the Double-lobed), but *Hepialus fusconebulosa* Deg. (the Map-winged Swift) was unusually common. *Colocasia coryli* L. (the Nut-tree Tussock) appeared both in the black form *melanotica* and the rarer bandless ab. *avellana*.

Up to the end of 1965 the total Macrolepidoptera species for the Area stands at 724 out of a total of 926 on the official list equivalent to 78.1% compared with 78.4% at the end of 1963.

A "Pug-headed" Perch (*Perca fluviatilis* L.) from The River Lea

By DAVID MARLBOROUGH (Recorder of Fishes) and BRIAN S. MEADOWS

INTRODUCTION

DURING routine examination of fish found dead in the River Lea, B.S.M. found a small perch of abnormal appearance near Feildes Weir Lock (O.S. Sheet 161, Reference 389093) on June 25, 1965.

The specimen was "pug-headed". That is, the anterior part of the upper jaw and skull was greatly shortened, though the lower jaw was of normal proportions. The specimen was preserved and radiographed from both sides. Subsequent examination and comments are based upon external features and radiographs, compared with the prepared skulls of normal perch.

DESCRIPTION

Posterior to the eye orbit, the specimen was of a normal perch, both externally and internally, comparing it with Schindler (1957) and radiographs with Dean (1895).

The dimensions were:

Overall:

Fork length (i.e. to tail fork)	11 cms.
Length of skull plus vertebral column	9.7 cms.

Head:

Tip of upper jaw to posterior edge of operculum	2.6 cms.
Tip of lower jaw to same point on operculum	3.0 cms.

In a normal perch, the skull anterior to the eye orbits is composed of a median ethmoid bone, toothed premaxilla, and paired lachrymal and prefrontal bones to either side (see Dean, 1895).

In the "pug-headed" Lea specimen, there is soft radio-transparent tissue where the pre-frontal and ethmoid bones would be, and the anterior edge of the lachrymals is indistinct. The nasal cavity is still evident, as are the nares. Around the orbit, posterior and dorsal to this, the bones appear normal.

The snout of this perch appears therefore to dip almost vertically down to the premaxilla from the anterior edge of the frontal bone. Hence the dentary bone of the lower jaw juts out far beyond the premaxilla, and the teeth on these bones cannot meet as they normally do.

The maxillary bone of the Lea specimen is deflected acutely downwards so as to adopt a position, when the mouth is closed, that the normal perch maxillary adopts when the mouth is fully open.

DISCUSSION

"Pug-headed" fish appear occasionally in the literature and this abnormality occurs in many species. It is found in Pike (Eggleton, 1938); Salmon (from the Dart, 1939); American Small-mouthed Bass (1937) and Cut-throat Trout in British Columbia; Carp (as long ago as 1554), Chub, Cod, Eels, Trout and Perch (Smith, 1937).



“Pug-headed” Perch from R. Lea—Radiograph of the Bones of the skull, Right Lateral View. This illustration shows the deformity of the skeleton in the anterior part of the skull. Note the missing ethmoid bone and the displaced premaxilla, and the position of the maxilla, with considerable ventral deflection from the normal position.

In a much-fished river such as the Lea, it may be asked whether hook injury has caused this condition. But there is no sign of scar tissue or injury. van Duijn (1956) also states that sporozoan infections may damage bones in young fish; the species *Lentospora cerebralis* Hofer and Plehn (*Myxobolidea*: Sporozoa: Protozoa) is noted for this in immature Trout (*Salmo* spp.). But there is no evidence from the specimen that any sort of healing has occurred.

We must therefore recognise that this specimen is comparable with the classic cases of “pug-headed”-ness, which is a congenital deformity. Smith (1937) quotes Knauthe 1891-2 (no further reference) as saying it is transmissible to a proportion of offspring. In this connection, it has been reported (Parks, 1966 personal communication) that there are numbers of fish in the River Lea with lesser deformities of the upper jaw. This may of course be due to non-congenital causes (*q.v.*), or there may be some variation within the population, of which the studied specimen is an extreme.

As with other recorded “pug-headed” fish, this perch was in good condition. Radiographs appeared to show food in the gut, so the deformity did not deny it the ability to feed.

ACKNOWLEDGEMENTS

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Excavations at Orchard Hill, Carshalton

Preliminary Note by D. J. TURNER, B.Sc.

EXCAVATIONS were carried out on land at Carshalton, known as Orchard Hill, between October 1964 and August 1965. The investigation was undertaken by volunteers working entirely at weekends. The Beddington, Carshalton and Wallington Archaeological Society sponsored the operation and were assisted financially and in other ways by the London Natural History Society and the Surrey Archaeological Society. Permission was readily granted by the owners of the land, the London Borough of Sutton, who are now developing the site for Old People's Dwellings.

Orchard Hill is on rising ground overlooking the well-known Carshalton Ponds. To the east is the parish church of All Saints and the village of Carshalton. To the north lie the gravel terraces of the Thames Valley and to the south the suburb-clad chalk hills of the North Downs. The Geological Survey shows the site as being on the chalk but the excavation demonstrated that there are, in fact, extensive vestiges of the Thanet Sand beds at this point. Previous excavations, a few yards to the north at Queen's Well, had shown the presence of the inhospitable clay Bullhead Beds that in part form a base layer to the Thanet Sands. On Orchard Hill, however, the vestiges were of light loamy sand overlying a sandy orange clay resting on chalk.

Elsewhere in North East Surrey, the spring line at the foot of the dip slope of the North Downs has been archaeologically productive, especially where Thanet Sand occurs. At Croydon, Mesolithic material has been found, Romano-British finds reported (e.g. Whimster, 1931), and a large Anglo-Saxon cemetery discovered (Morris, 1959). At Waddon occupation from the Iron Age to Romano-British times is well attested (summary in Morris, 1959, p. 137). Beddington also has produced prehistoric material (refs. in Whimster, 1931) and its Romano-British and Anglo-Saxon sites are well-known (Keulemans, 1963; Morris, 1959). A late Bronze Age Hoard was found between Beddington and Wallington (Anderson, 1874) and at Bunkers Field, by the Wandle in Wallington parish, various finds have been uncertainly reported and occupation probably took place in Iron Age and Romano-British times at least (Major, 1925). A late Bronze Age hoard has been found in Carshalton (Birch, 1925) and so have Anglo-Saxon graves (Clinch, 1904). A small Iron Age Hill Fort stood not far to the south, where Queen Mary's Hospital for Children stands today (Lowther, 1946). Further west at Cuddington and Ewell, occupation is well attested in Mesolithic, Iron Age and Romano-British times (e.g. Whimster, 1931; Lowther, 1949). The list can be extended indefinitely both east and west. Most of these places have produced Mesolithic material, but much of it remains unpublished.

By the time of Domesday the parishes whose names have been cited had become established, almost invariably with their churches standing on sand or chalk just by the spring line. Medieval man had followed prehistoric. Dry sand or gravel adjacent to water has always attracted settlement and the continuity of occupation along this spring line attests its attraction.

Hopes could be entertained, at the outset of the excavation, for the discovery of occupation debris, or more, from some of these periods.

The main hope was for remains from the Medieval period: a hope which was engendered by the proximity of the parish church and by the Geological Survey's diagnosis of chalk. In fact the Medieval finds were disappointing but the material from other periods more than compensated for this.

The site available for digging had been occupied by a group of cottages and their gardens. Research by Mr. Totman of the Beddington, Carshalton and Wallington Archaeological Society has shown that the cottages had originally been the hunting stables of the Greyhound Inn and were converted for occupation by one Richard Brightling in 1838. They had been in continuous occupation until 1963 and the activities of their gardening owners had destroyed much of the stratigraphy on the site. Victorian rubbish pits dotted the gardens and holes dug to take Anderson shelters in the 1939-1945 war were found in two of the trenches. Work was concentrated in the gardens and two rows of trenches running North-South were opened and one row running East-West.

Disturbance was found to be comparatively uniform over the whole site. Prior to the gardening and rubbish depositing operations the site seems to have been ploughed and ploughing had truncated a series of ditches and shallow gullies, some of which appeared to date from the Medieval period. Post-Roman pottery found included grass tempered ware from Anglo-Saxon times, shell tempered wares of Norman times and hard gritty wares down to the close of the 13th century. All of it was in an abraded and fragmentary condition. The pottery found in earlier excavations on the Queen's Well site seemed to run from the 13th century through to modern times. It would seem, therefore, that the Medieval occupation on this hillside to the west of the church shifted slightly downhill during the 13th century.

A small amount of Romano-British material was also found. This consisted of a few sherds of pottery and two pieces of characteristic tile. This cannot be thought to indicate occupation actually on the site but should show that there was Romano-British occupation nearby: a conclusion that is not surprising.

The most important group of finds were, however, from the Mesolithic period. Worked flint was found at all levels and in all trenches in considerable quantities. In some trenches there appeared to be vestigial remains of the Mesolithic stratum but traces of this were small. The interpretation of this aspect of the site must rest upon the material itself, its widespread occurrence and considerable density. Well over 10,000 pieces of worked flint were collected and as yet sorting is only in its preliminary stages. Conclusions stated here must be regarded as tentative and subject to revision when the sorting and catalogueing is complete.

As with all assemblages from occupation sites of flint-using communities, waste material predominates. However, both the waste flakes and cores and the finished tools and utilised pieces are characteristic of the Mesolithic period. Because of the considerable disturbance of the site, great attention is being paid during the sorting to the possibility of there being worked flint from more than one cultural complex. As yet little evidence has come to light to suggest that the assemblage is anything but homogenous and at present the worked flint appears to be almost entirely of the Mesolithic period.

Most of the usual types found on Mesolithic sites are present. Microliths, while not abundant, were found in reasonable quantities. Scrapers

were numerous, boring tools, axe sharpening flakes, a small axe and a fabricator were found. Burins are apparently rare but flakes that have been trimmed in a variety of ways to form a range of tools whose purposes are difficult to diagnose are very common. Blade-like flakes with transverse and oblique truncating also occur frequently.

The most frequently recurring type of microlith was the obliquely blunted point (Clark, 1932). This is a form common in all Mesolithic contexts and was probably utilised to form the barbs of harpoons made from bone or wood. They were usually prepared on small specially struck blades by notching the blade and snapping the tip off at the notch before applying the final trimming blows at the point. This technique results in the characteristic waste fragment known as a micro-burin. Several micro-burins were found at Orchard Hill and also a number of notched blades that had snapped at the wrong place or had been rejected for other reasons.

Another frequently occurring microlith type was the small blade with trimming down the whole of one side or, more rarely, the whole of both long sides. These occurred in pointed, segmental or rod-like forms. The pointed form was probably utilised in much the same way as the obliquely blunted points but the purpose of the other types is not fully understood.

A few microliths of more specialised form were found. Two hollow-based points, which had probably been made as arrow or harpoon tips, were found. One triangle and one sub-crescent were the sole representatives of geometric forms discovered. One or two of the microliths found do not fall into any of the well-known classifications.

The truncated blades vary from minute examples difficult to differentiate from obliquely blunted points to types where the truncation forms a virtual scraper edge. The use of these tools is obscure but their presence is a diagnostic feature.

True scrapers were numerous but were mainly of relatively crude manufacture. Core scrapers were comparatively rare, the majority being made on medium sized flakes, often with the cortex of the flint remaining in part. The boring tools found were also of crude types; nothing resembling the elegant elongated awls found at Star Carr (Clark, 1954) was found at Orchard Hill.

An axe element was present in the assemblage but was not prominent. It was represented by a few axe sharpening flakes, difficult to differentiate from certain types of core rejuvenating flake, one or two broken pieces of tranchet axe and one small complete tranchet axe. The complete specimen has been used to give a demonstration of its effectiveness and was found, with simple hafting, to be quite satisfactory for dealing with small saplings and branches.

The excavations showed that the mesolithic material was distributed over an area at least 130 ft. by 80 ft. and a mean density of well over one hundred pieces of worked flint per square yard persisted over the area. Even allowing for scattering due to post-Mesolithic disturbance, and this was probably not excessive, the site is revealed as a large one and the occupation must have been considerable. A fully excavated site at Downton, Wiltshire which produced an analogous flint assemblage, occupied a roughly circular area some 40 ft. across with a mean density in the region of 200 worked flints per square yard.

The Downton industry (Higgs, 1959) bears many resemblances to that

found at Orchard Hill. Similar types of microliths occur at both sites, the awls are mainly short and squat, fabricators are found at both sites, burins are rare. The most telling factor, however, is the high proportion of what may be termed miscellaneous trimmed flints. At both sites a large number of flakes were found having a variety of deliberate secondary working that, generally speaking, defies classification or interpretation.

The features that link Downton and Orchard Hill place the industry found at Carshalton firmly into a group of late Mesolithic industries recognised in South East England. Higgs has demonstrated the clear difference between the Downton group on the one hand and the Farnham or Horsham group on the other. It is equally possible to demonstrate the difference between the Downton Group and the early Maglemosian of the Thames and Kennet Valley. However, it may become possible to demonstrate that the Downton group is derived from the Thames Valley Maglemosian. This culture is best known from a series of well excavated sites in the Newbury area (e.g. Wymer, 1962) but it also occurs widely in the lower Thames Valley.

Higgs has also cogently argued a late date for the Downton group which includes sites at Peacehaven, Sussex; Iwerne Minster, Dorset; and Addington, Kent. The main reasons for the late dating are given as the presence of a heavy type of transverse arrowhead, the declining importance of microliths, and the increasing importance of macroliths. The last two features are shared by the Orchard Hill material, but transverse arrowheads appear to be absent at Carshalton. While there may be cultural reasons, as distinct from chronological reasons, for these characteristics, it is certainly not unreasonable to place the Orchard Hill site towards the end of the Mesolithic period, say *c.* 4,000 BC. It is disappointing that the disturbance of the site precluded the application of ecological methods, such as pollen analysis, to help determine the date of the industry. There is clearly a pressing need for the excavation of a Downton group site in circumstances that allow for such a study to be carried out.

At the Downton site clear traces were found of a shelter or shelters resembling tents open on one side and associated with pit fires. At Orchard Hill tenuous traces of what could be similar structures were found in two trenches. This form of structure is in contrast to the semi-subterranean dwellings associated with the Horsham culture sites or the birch bark platforms associated with some Maglemosian sites.

The economy of a settlement such as that on Orchard Hill would have been firmly based on food-gathering, fishing and hunting. The meres and streams of the Wandle and its tributaries would have provided an ample supply of fish and game. Larger prey would have been found on the Downs to the south. It must be stressed that the flint industry discovered here is only a small part of the equipment of these people. Waterlogged sites such as Star Carr in Yorkshire have revealed a truer picture of Mesolithic man's complete equipment. From these sites it is apparent that wood, antler and bone were as important as flint. However, such sites are rare and it is on the flint industry that diagnoses usually rest.

After building works started on the site a weekly watch was kept by a group of volunteers under Mr. Gilbert. This has produced a number of interesting finds but has shown that if excavation had not been carried out the true nature of the site would have remained obscure. Collecting under the conditions prevalent on a building site in winter makes the discovery of smaller artifacts difficult and without excavation few, if any,

microliths would have been found and little of the interesting post-Roman pottery.

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Conservation in the London Area in 1965

IN last year's report, reference was made to the Civic Trust plan for a Regional Park in the Lea Valley. Developments have now reached the stage at which a private Bill had been drafted by the Greater London Council for the setting-up of a Lea Valley Authority, to be promoted in the 1965/66 session of Parliament. From the naturalists' point of view, the most important provisions would enable the Authority to establish nature reserves, appoint wardens or rangers, and make agreements with other bodies or individuals for the delegation of its functions. This could mean that organisations such as the County Naturalists' Trusts might be asked to manage or advise on the management of reserve areas.

To ensure that the naturalists' interests were not overlooked, a Lea Valley Liaison Committee was set up to deal with the Planning Committee of the Greater London Council. The Liaison Committee comprised Mr. Coleman-Cooke of the Council for Nature, Mrs. Small (who had been acting as the Secretary of the Society's own Lea Valley Working Party) and Mr. Lee of the Royal Society for the Protection of Birds. They were joined shortly after by Mr. J. Crudass and Mr. B. A. Meadows.

The relationships with the Greater London Council were most favourable, and meetings had been held with the Council's Chief Planning Officer. The report prepared by the Working Party (which was published in the *London Naturalist*, No. 44) was to be used as the basis of discussions.

The implications of the establishment of a recreational park in this area were tremendous, not only from the ecological aspects of the scheme itself, but also because the project might well form a pattern for similar developments elsewhere. The whole situation would be carefully watched by our naturalists and conservationists.

At the second "Countryside in 1970" Conference in November, the twelve study groups made a great many recommendations, most of which were long-term proposals requiring a certain amount of legislation, but which could have far-reaching effects from the naturalists' view-point.

Although too soon to give an evaluation of the results of the conference, owing to the very wide field of activities involved, it could be said that some of the proposals, such as the setting-up of a Countryside Commission and the establishment of country parks under local authorities, could do much to relieve the ever-increasing pressures on valuable habitats.

A general Society meeting with practical conservation as its theme was held in March, at which a most interesting illustrated lecture was given by Mr. F. H. Reynolds, Conservation Officer of the Surrey and Sussex Naturalists' Trusts, and the Nature Conservancy film "The Living Pattern" was shown.

Following a recommendation of the Nature Conservation Committee, a further series of field meetings was organised during the year to illustrate aspects of conservation. Held at Esher, Ruislip, Ruxley, Staines Moor and Stanmore, the meetings were unfortunately again very poorly attended. It was a matter of great concern to the Committee that members were, on the whole, not as aware of the problems of conservation in the London area as they should be, and it was again stressed that but for the continuous activity of the conservationists, sites for natural history studies in and around London would be rapidly diminished.

The most valuable contribution that members and the Society can make in conservation is by the accumulation of records and other information

in the various disciplines as an aid to the survey of sites of natural history interest, or by taking part in the actual surveys. In an effort to provide members with background information and practical work on the subject, the Committee had organised a weekend residential course on survey techniques to be held at Juniper Hall Field Centre on February 25-27, 1966—the first, it is hoped, of many.

In the following brief report of some of the events in our area during the year, the county basis used is that prior to the setting-up of the Greater London Council.

Further dumping of spoil at Gray's Chalk Pit, ESSEX, had taken place, but following representations by the Essex Naturalists' Trust, an agreement was reached under which the most valuable area would not be altered for 25 years.

The whole question of rubbish-tipping was causing concern in the county, and the matter was referred to the Council for the Preservation of Rural England.

There was a possibility that the Norfolk Motorway would be routed through the Roding Valley, although any loss there would be off-set to some extent by the easing of the pressure of traffic in Epping Forest. The deer survey being carried out in the Forest should yield some useful information, which would be an aid to the management of the herds.

At Broxbourne, HERTFORDSHIRE, a gravel pit in the Lea Valley had been filled in and therefore lost as a potential nature reserve.

The Herts. and Middx. Trust opposed an application to develop part of Lees Wood and Jacotts Hill, Watford, for residential purposes, not only because the area was a statutory Site of Special Scientific Interest in the Green Belt, but also because the continual erosion of such areas must soon render them valueless for wild life.

An application to extend gravel-digging in the Ver Valley was not opposed by the Trust. Trial borings indicated that workings would be dry, and the Trust suggested that permission to excavate be granted on the understanding that, if the workings remained dry, the land should be restored to agriculture.

A survey of the ponds remaining in Herts. and Middx. was being organised by the Trust, in order to assess the present position of these interesting habitats and to take steps to preserve a sample before they are lost altogether.

The grounds of Bentley Priory were now being patrolled by keepers, which should help to restrict threats to the wild life of this area. Some drainage work had been carried out there, but only the less interesting southern end of the area was affected.

A memorandum stating the natural history interest of Copse Wood, Ruislip, and making recommendations as to management, was submitted by the Trust to the London Borough of Hillingdon, following representations by the Trust and the Nature Conservancy and a site meeting of the parties concerned.

A serious case of pollution occurred at Ruislip Reservoir in February, when vandals broke into a local ironmonger's shop and turned on the taps of the creosote drums. The creosote eventually drained into a feeder stream to the reservoir, where one of the immediate effects was the death of some 200 frogs in the reserve and the stream. This probably represented about 85-90% of the population and was an indication of the dangers of pollution and the vulnerability of our wet areas.

The Trust was hoping, by agreement with the North-West Middlesex Hospital Board, to acquire its second reserve in MIDDLESEX. This was Old Park Wood at Harefield, noted for its botanical interest and particularly for the abundance of Coralroot (*Dentaria bulbifera*).

The construction of the new Aylesbury Reservoir adjoining Staines Moor had been started. The approach road was being built along the route of the disused railway, and a careful watch would be kept on the effects on the area.

It now seemed likely that the application to extract gravel at Kempton Park would be approved by Surrey County Council, who are now responsible for the area. The heronry in the Park would therefore appear to be doomed, and yet another colony would be lost to the London area.

The 34 acres of land by the river at Ham, SURREY, which had been the subject of a private development proposal, was subsequently purchased by the Borough of Richmond upon Thames. 13 acres would be used for housing, and the remainder kept as a public open space.

The ministerial decision on whether the proposed Esher by-pass should be routed across the commons or along the River Mole was to be published on December 10. A letter of protest had been sent by the Committee and a case was being prepared for use at any subsequent Public Inquiry.

An Open Spaces Committee had been set up by Esher Urban District Council, and a memorandum of management recommendations had been submitted by the Surrey Naturalists' Trust.

At Godstone, the Trust had been given 10 acres of land and the adjacent 6 acres of lake as a reserve, with an endowment for its upkeep.

The scale of re-afforestation with conifers at Limpsfield Chart was still causing concern, but the interesting beechwood there had been saved by tree preservation orders.

Another type of development, gravel-digging, was increasing at Worms Heath, and a careful watch was being kept on this threat to a valuable area.

In KENT, a considerable amount of conservation work had been carried out at Downe Bank and Ruxley Gravel Pit by the Kent Naturalists' Trust.

Efforts by the Trust to persuade the local authority to declare a nature reserve on part of Crofton Heath had failed with the local government re-organisation in April, and negotiations had been re-opened with the new council.

The declining bird population of Chislehurst and Paul's Cray Commons had been causing concern, and the problem had been taken up with the Conservators by the Kent Naturalists' Trust.

The year 1965 has, on the whole, been an interesting one, though frustrating at times. Our relationships with the Home Counties' Trusts and the Nature Conservancy have been excellent, and we should like to take this opportunity of expressing our thanks to them for their help during the year.

We now look forward to next year in the hope that we can achieve at least something in the field of conservation, and also in the hope that members of our Society will take a greater share and interest in this vital work.

L. MANNS, *Conservation Secretary*.

Statement of Accounts for the

1964		Receipts					GENERAL	
£	s.	d.					1965	
						£	s.	d.
1,834	5	10	Subscriptions Current ...	...	...	1,869	18	5
36	12	6	Subscriptions Arrears ...	...	...	13	10	0
54	17	6	Subscriptions Advance ...	...	...	36	15	0
43	15	0	Entrance Fees ...	...	...	45	15	0
<hr/>						<hr/>		
1,969	10	10						
100	0	0	Donation—Bookham Common Hut ...	...	...			1,965 18 5
16	9	0	Donation—Others ...	...	...			163 10 0
2	12	6	Interest £75—3½% War Stock ...	...	...	2	12	6
5	8	0	Interest £180—3½% Savings Bond 60/70 ...	...	...	5	8	0
124	2	8	Interest Deposit Account ...	...	...	159	19	7
<hr/>						<hr/>		
127	1	0	Bird Film Receipts ...	...	...			168 0 1
99	15	0	Trans. from Bird Book Account ...	...	...			104 6 9
109	17	7	Balance in hand 31.10.64 ...	...	...			40 5 11
<hr/>						<hr/>		
£2,554	16	7						£2,442 1 2
<hr/>						<hr/>		

										PUBLICATIONS		
62	19	1	Sale of Publications	...	...	...	...	...	...	82	16	3
—	—	—	Grant from Royal Society	...	...	...	...	...	...	100	0	0
38	16	0	Advertisements	...	...	...	...	...	...	53	18	0
—	—	—	London Bird Report No. 28 Reserve	...	...	...	500	0	0			
70	2	6	Less: London Bird Report No. 28 Cost	...	...	...	393	3	0			
										<hr/>		
1,414	4	0	Transferred from General Account	...	...	...	...	...	...	106	17	0
										<hr/>		
£1,586	1	7								1,336	19	0
										<hr/>		
										£1,680	10	3
										<hr/>		

							LIBRARY AND	
266	8	2	Balance 31.10.64 for Printing Catalogue ...	...	...		200	0 0
71	0	9	General Account Grant for Books		30	5 6
50	0	0	General Account for Printing Catalogues		—	— —
<hr/>						<hr/>		
£387	8	11					£230	5 6
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							PREMISES	
1,300	0	0	Balance 31.10.64		1,450	0 0
100	0	0	Transfer from General Account		50	0 0
50	0	0	Transfer from Bird Book Account		—	— —
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£1,450	0	0					£1,500	0 0
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							LIFE COMPOSITION	
			Balance 31.10.64		£400	0 0
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							“BIRDS OF LONDON	
							(Ornithological	
229	19	6	Paid for 176 copies		5	3 2
1	11	0	Interest for 1965		8	18 3
137	5	1	Royalties on 2nd Edition ...	...	...		154	16 11
273	10	4	Balance 31.10.64 ...	...	...	
<hr/>						<hr/>		
£642	5	11					£168	18 4
<hr/>						<hr/>		

Audited and found correct
July 5, 1966

Year Ended October 31, 1965

ACCOUNT

1964

Payments

1965

£	s.	d.								£	s.	d.
220	4	0	Hire of Rooms and Halls	...	...	...	...	...	...	258	7	6
128	4	6	Bookham Common Hut	...	...	...	...	...	...	20	12	6
77	5	3	Printing and Stationery	...	...	...	...	...	...	235	15	11
200	0	0	General Sec. Honorarium	...	...	...	...	...	...	200	0	0
31	6	8	General Sec. Telephone	...	...	...	...	...	...	31	11	0
53	3	9	Postages ...	...	...	...	...	...	...	58	13	1
47	19	0	Subs. to other Societies	...	...	...	...	...	...	39	2	0
91	2	9	Sectional Grants and Expenses	...	...	...	...	...	...	105	7	0
11	7	6	Sundries ...	...	...	...	...	...	...	21	4	4
18	12	6	Bird Film Payments	...	...	...	...	...	...	2	18	8
121	0	9	Grant to Library Account	...	...	...	...	...	...	30	5	6
1,414	4	0	Grant to Publications Account	...	...	...	...	...	...	1,336	19	0
100	0	0	Trans. to Premises Account	50	0	0
40	5	11	Balance in hand 31.10.65	51	4	8
<hr/>										<hr/>		
£2,554 16 7										£2,442 1 2		
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ACCOUNT

160	2	6	Programme 1965	164	2	6
781	8	6	London Naturalist No. 44	853	15	3
500	0	0	London Bird Report No. 29 Reserve	...	...	...	...	...	...	500	0	0
56	4	6	Addressing and Wrapping	...	...	...	...	...	...	70	1	2
88	6	1	Postages ...	...	...	...	...	...	...	92	11	4

 £1,586 1 7

 £1,680 10 3

COLLECTION ACCOUNT

187	8	11	Purchase of Books	...	...	...	...	...	...	30	5	6
200	0	0	Balance 31.10.65 for Printing Catalogues	200	0	0

 £387 8 11

 £230 5 6

ACCOUNT

1,450	0	0	Balance 31.10.65	1,500	0	0
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 £1,450 0 0

 £1,500 0 0

ACCOUNT

Balance 31.10.65	£400	0	0
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AREA" BOOK ACCOUNT

Section)

337	14	0	Publishers for 263 copies	—	—	—
99	15	0	Trans. to General Account	—	—	—
50	0	0	Trans. to Premises Account	...	...	...	...	...	...	—	—	—
154	16	11	Balance on Deposit Account 31.10.65	...	...	...	...	...	...	168	18	4

 £642 5 11

 £168 18 4

R. W. HALE, *Hon. Auditor.*
 H. B. CAMPLIN, *Hon. Auditor.*
 A. J. BARRETT, *Hon. Treasurer.*

Books

Common Wild Flowers and Fruits, by G. A. Perry and M. J. Hirons. Find and Name Series No. 1, London: Blandford Press, pp. 143; coloured photographs and diagrams in text, 8vo., 1965. Price 12s. 6d.

The publishers state on the dust wrapper that this first book in a new series is "intended as a guide for young children (ages unspecified) in *identifying* (my italics) and learning more by discovering about *some* (my italics) of the plants around them". To take up the last point first, it would have been much better had the title been prefixed by the word "Some" for a book of this size cannot deal with anything more than a small selection of species from the British flora. Secondly, this book can in no true sense of the word be called a "guide to identification". It contains no keys nor even a "guide to colour"—the usual alternative given by authors of popular books if they feel their readers should be shielded from the rigours of technical botany.

The arrangement adopted by the authors surveys, first, 16 common trees (the first section in flower; the second section in fruit); then 16 Spring flowers of woods and copses; and lastly 16 common species of the hedgerows and roadsides arranged "according to the months of the year when you are likely to see them" [*sic*]. Each has an accompanying coloured photograph, line drawing and text matter. Thus it would seem that a total of 48 species is treated, but on examination this is found to be not quite true. The Lesser Celandine and the Primrose are dealt with in two places and what is even more unusual in one book, the same photographs have been used twice over. (In these cases it would have been more appropriate had the authors selected two other examples from the many common species that may be chosen of our flora.) In the Tree section where each description and illustration of the flower of a tree is supplemented further on in the book with its fruit counterpart, the elm flower (presumably that of the Common or English Elm (*Ulmus procera*), although it does not say) has for its fruit a photo of the Wych Elm (*Ulmus glabra*). One or two photographs would seem to be wrongly attributed in relation to the text: that used for the Early Purple Orchid appears to be a Marsh Orchid, and that used for the "Common Field Speedwell" is the Germander Speedwell (*Veronica chamaedrys*). In the latter a further confusion has arisen with the use of an invented common or English name for there is no British plant known as the "Common Field Speedwell". The text matter obviously refers to the Common Speedwell (*Veronica officinalis*). The name Field Speedwell, when applied correctly, refers to two other species of *Veronica*, namely *V. agrestis* and *V. polita*. Likewise by "Wood Dog Violet", I think Wood Violet (*Viola riviniana*) is intended as opposed to the Dog Violet (*V. canina*). The photograph is of the former. The use of a photograph of one species to illustrate the text of another allied to it, is bad policy especially since it is very confusing to the beginner who hopes to rely on books as a basis for gaining critical judgement.

The coloured photographs illustrating the book are, on the whole, reasonable. The trees, especially those taken with the aid of flash apparatus are good (e.g. yew berries, beech fruit and horsechestnut fruit) but several of the flower pictures have suffered in the process of reproduction

to book plate (e.g. Ramsoms has a curious blue tinge whereas the petals should be pure white, and ground ivy should be a violet-blue not reddish-purple). The Yellow Deadnettle on the dust wrapper (glossy surface) is considerably better than the same photograph appearing on the matt surface in the book.

All this may seem harsh criticism but I feel it has been necessary to review this book at some length not only to make would-be purchasers aware of its faults but in the hope that the Editors of the series will take heed and see that such mistakes are not repeated in any future titles intended for the rising generation of young naturalists. Strict attention to correctness of detail is a factor which lifts any one book above the surfeit of similar introductory volumes published annually that get tried, tested and found quite unreliable.

Whether buying it for a child, for a schoolteacher's use in class or for yourself as a beginner, do not expect this book to do more than just whet the appetite. With this objective in mind it will, I think, do well. The "enquiry-questions" following each plant's description have obviously been carefully thought out with the idea of encouraging further observation. It would, however, have been useful to the harassed schoolteacher with limited time and few reference books in the junior school library to have been given model answers to those questions asking for elucidation of fact. Two pages could have easily become available by compressing the 3-paged widely spaced index into a single page and utilising smaller print. Indeed, on looking through the index one wonders why it is necessary in a beginner's book on wild flowers and fruits to give space to such "non-plant" entries as sheep, sparrows, pigs and horseflies (to mention a few) since any reference to these creatures in the text is purely incidental or trivial. Trivial did I say?—perhaps that is unfair because it was through scanning the first column that my eye alighted on the entry "Badgers". Having been interested several years ago in the diet of this much maligned mammal I therefore turned to page 61 to see what was said about it. There I read that the badger, as well as squirrels, mice and men, likes eating sweet chestnuts. Not even such elbow books of mine as Ernest Neal's *The Badger*, The Mammal Society's *Handbook of British Mammals*, nor the earlier works of Sanders, Step and Mortimer Batten could give me this piece of information!

E.W.G.

The Climate of London, by T. J. Chandler. 292 pages. Hutchinson, London, 1965. 70s.

The significance of climate and microclimate in plant and animal distribution is well established, although the exact nature of the relationship is often imperfectly understood. The presence of Arctic-Alpine species in Snowdonia, the existence of Lusitanian species in the sheltered rock-crevices of the High Weald and the broad patterns of bird migration all demand, at least partially, a climatic or meteorological explanation.

The clearance of woodland and the drainage of marsh and fen in the past has created the pattern of microclimate in rural Britain today so that, within the limits determined by the relative strength of the pressure zones, our detailed climate is no less man-made than is our landscape. If this is true of our rural areas, it is even more striking in urban regions; yet the supreme example of a man-made local climate in this country has

to date received small attention.

Many writers have mentioned the effect of London's climate upon its flora and fauna in general terms, and the relationship between the distribution of such susceptible groups as mosses and lichens and the incidence of air pollution has been noted. Virtually no detailed work has been done, however; yet it is hard to believe that the local climate of London, with its "heat island", its longer growing season, its inblowing winds and its heavy pollution does not have implications for the naturalist.

Dr. Chandler, lecturer in Meteorology and Climatology at University College, is not a naturalist, yet he has done the naturalist no mean service. This is a detailed analysis of London's urban climate, backed by a wealth of statistical material in the form of diagrams, maps and tables. At first sight, the mass of data may seem overwhelming; yet, as the author admits, inadequate records mean that there are still many gaps in the overall picture.

For the naturalist concerned with the London area, the value of this book is as a work of reference; and every serious London naturalist should be aware of its existence, and the implications which lie behind its findings of the complex climatic pattern which exists within the London area. That climatic pattern is a major habitat factor.

At the beginning of his work, Dr. Chandler quotes Captain Alexander Maconochie, the first Professor of Geography in this country, at University College:

"Meteorological information can only be depended on when it is the result of the comparison of long continued observations, not the vague surmise founded on a few desultory remarks".

It is advice which is as applicable to the naturalist, concerned with the influence of climate, as it is to the meteorologist.

P.A.M.

Introducing the Insect, by F. A. Urquhart. 258 pages, 153 Figs. Frederick Warne and Company Limited, London, 1965. 30s.

Dr. Urquhart, Associate Professor in the Department of Zoology at the University of Toronto, wrote this book in 1949. His purpose was to introduce the subject of Entomology to the beginner, whether he be a layman or a student proposing to study entomology to degree level. The popularity of the book in Canada prompted the publishers, Warnes, to revise the book for British readers.

Minor changes are stated to have been made to avoid confusion to readers in this country, but some odd statements have persisted. For instance, Dr. Urquhart stresses the importance of labelling but suggests the nearest Post Office as the best place. He also recommends potassium cyanide for killing all insects, although this poison is usually restricted to the Lepidoptera in this country. There are a few careless mistakes too. On page 36, the house fly is stated to be a member of the Hymenoptera but later on page 233 it is correctly placed in the Diptera.

After explaining the anatomy and life history of insects and giving methods of collecting, Dr. Urquhart introduces the reader to a key for identifying the Orders of insects. It is not easy to compile a simple key to so wide a class of animals as the *Insecta* and the author is to be congratulated on producing so simple a key. Because of its simplicity, the student should be warned that some insects have exceptional structures and misleading results may occur.

Tropical insects are referred to in the course of the book. This is a good feature as it removes the insularity so often to be found in British works.

The text is sufficiently stimulating to make the reader want to pursue his studies further and a second revised edition will no doubt be a very useful work.

D.G.H.

Common Spiders, by I. E. Finch, M.A., B.Sc., Leaflet No. 14, School Natural History Society. 1s. 6d.

Spiders, being widespread and common throughout most of the year, make good subjects for study. This 20-page booklet, produced for schools, introduces the study of spiders and contains, in addition to sections on structure and identification, descriptions of the webs and activities of some of the most common species. Latin names are avoided in the belief that children are deterred by their use. One or two minor errors are present but the text is lucid and a list of books contains all those necessary for the keener student to take his studies further.

D.R.N.

Blandford's Rural Studies Series:

Book 5—*Insect Life of Farm and Garden*, by M. J. D. Hiron. 90 pages.

Book 6—*The Farmer's Crops*, by G. A. Perry. 104 pages.

Book 7—*Science in the Garden*, by M. J. Rolls and R. B. Morrison. 66 pages.

Book 8—*Growing and Studying Trees*, by J. B. Wood. 96 pages.

Illustrated with photographs and diagrams in colour and black and white. Blandford Press, 1966. 12s. 6d. each.

Aimed at the rural studies student of secondary school age, these books could equally well stimulate the aspiring adult ecologist with their wide range of material. Each book commands a varied field, incorporating history, geography and economics with natural sciences, with a general, but straightforward, introduction expanding into a precise account of its subject both within the British Isles and, where relevant, overseas.

Book 5 deals with insects in groups arranged according to physical features, describing succinctly the life cycle and the damage or benefit to crops and animals, but meagre control methods are included.

Book 6 divides farm crops into wide groups, explaining the botanical characteristics of each and giving well chosen examples. Methods of cultivation, use of crops and any particular work involved are noted and the book concludes with a section on pests and diseases and a poignant comment entitled "The Future—Food or Famine".

Book 7 elucidates the myriad factors influencing growth, variation and production of improved strains and includes some very sound ecological method.

The subject of Book 8 is, perhaps, furthest from readers' immediate experience, but expanding afforestation in Britain must give this volume increasing importance. It stresses the value of trees from ecological and commercial points of view and describes forestry methods, timber types and a wide variety of difficulties encountered in silviculture. Sketch maps of the British National Forest Parks are provided in an appendix,

but lose some clarity by the surrounding, sometimes irrelevant, drawings.

All the books are arranged similarly with two sections appearing at the end of each chapter. "Test Your Knowledge" is a list of questions covering the salient points of the chapter.

"Things to do" lists suggestions for further research, usually supplementing the information given in the preceding chapter. Some of these projects are ambitious and require facilities not readily available to all, but most readers could find something to satisfy their interest.

Devoid of unnecessary technicalities and precisely written, these books and the four preceding volumes, published last year, create a useful basic source of practical and theoretical material, not only for the students and teachers for whom it was intended, but for any interested reader who can overlook a style of presentation perhaps too reminiscent of school text books for some.

H.B.

The Harvest that Kills, by John Coleman-Cooke. 208 pages. Odhams, 1965. 25s.

This book is perhaps best summed up by its sub-title "an urgent warning about man's use of toxic chemicals on the land". The shock engendered by the late Rachel Carson's monumental "Silent Spring" was to some extent tempered by the feeling that American experiences were unlikely to be repeated here. However, Mr. Coleman-Cooke's survey of the British scene shakes us out of our complacency—it is clear that we, too, face grave problems. He is scrupulously fair in his presentation of the facts, avoiding undue sentiment, and has obviously gone to a great deal of trouble to amass accurate information, as his extensive bibliography confirms. The style may lack distinction and there are perhaps too many rhetorical questions, but the vital points are forcibly made and the book as a whole is both informative and thought-provoking. It is to be hoped that Mr. Coleman-Cooke's warning will be heeded by those in authority. To quote his final sentence: "The planners will have to be quick for there is not much time".

J.S.

Tomorrow's Countryside: The Road to the Seventies, by Garth Christian, Foreword by H.R.H. The Duke of Edinburgh, K.G. Pp. xiv + 234, 60 illustrations. John Murray, London, 1966. 35s.

This learned yet immensely readable study—probably the first comprehensive review of the problems affecting our dwindling countryside—should be required reading for all naturalists and country-lovers. Mr. Christian briefly traces the history of man's use and misuse of his environment, examines current pressures on the countryside and looks, not without hope, to the future. Present-day problems covered include modern farming methods, toxic chemicals, the use of water resources, the increasing need for roads, houses, recreational facilities etc., and a number of practical solutions are suggested.

The book is particularly valuable for its broad outlook and its balanced attitude. Unlike many naturalists, Mr. Christian is a realist and his thesis is that rather than oppose inevitable developments we must subject them to overall planning based on sound ecological principles, and train

the rising generation to become trustees of their natural heritage. Well-chosen photographs powerfully reinforce the points made in the text, and an extensive bibliography is provided.

As Mr. Christian says in his introduction "The shape of tomorrow's countryside will depend on the attitudes and outlook that dominate public opinion in the immediate future". This book—published to coincide with National Nature Week—should help to create the enlightened public opinion that is so desperately needed.

J.S.

The Library

The following books have been purchased for the Library or received for review:—

- Ager, D. and Smith, W., *The Coast of S. Devon and Dorset between Branscombe and Burton Bradstock*. (Geologists' Association Guide no. 23), 1965.
- Bathurst, R. G. C. and others, *Geology Around the University Towns: Liverpool*. (Geologists' Association Guide no. 6). 1966.
- Brinkhurst, R., *A Guide for the Identification of British Aquatic Oligochaeta*. (Scientific Publication no. 22 of the Freshwater Biological Association). 1964.
- Christiansen, M. S., *A Pocket Encyclopaedia of Wild Flowers*. 1965.
- Davis, P. H. and Cullen, J., *The Identification of Flowering Plant Families*. 1965.
- Harley, B. H., *Birds of the Harrow District*.
- Herts. and Middx. Trust for Nature Conservation, *Copse Wood Report*.
- Hoover, H., *The Long Shadowed Forest*. 1965.
- International Council for Bird Preservation. Report on the Working Conference of Birds of Prey and Owls. 1965.
- Jellis, R. (Editor), *The Countryside for Use and Leisure*. (B.B.C.). 1965.
- Macan, T. T., *A revised Key to the British Water Bugs*. (Scientific Publication no. 16 of the Freshwater Biological Association). 1965.
- Martin, W. Keble, *The Concise British Flora in Colour*. 1965.
- Ministry of Agriculture, *Agricultural Chemicals Approval Scheme*. 1965.
- Nature Conservancy, *Report on Broadland*. 1965.
- Thomson, A. Landsborough (Editor), *A New Dictionary of Birds*.

A further ten standard works of reference have been purchased and transferred to the Bookham Common Research Centre as the basis of a small library there.

In addition, we are most grateful for books received as gifts from members and transferred from Ealing Library; these are too numerous to list here.

The Library Committee has determined a definite policy for the future, in an attempt to distribute a limited budget more satisfactorily. This comprises the following points:—

1. Aim: to provide a library of books, periodicals and other publications on natural history, including archaeology, particularly those having reference to the Society's area.
2. Preference should be given to publications likely to be needed for research and not normally available from public libraries.
3. Non-scientific books should not be purchased.
4. Any gifts, bequests etc., should be accepted and added to the Library subject to the approval of the Library Committee.
5. As runs of periodicals are not, for the most part, available to the ordinary naturalist, the coverage should be as wide and varied as considered desirable.
6. As many county and other district lists of the British Isles should be in the Library as possible.
7. Periodicals, certain reference books and rare or valuable books should be for reference only.

Books will only be purchased once a year, so that lists of recommended publications from sectional committees may be considered together.

This year, a working party reviewed the journals purchased or exchanged by the Society and those retained have been made as complete as possible and bound if practicable. However, parts are still missing, particularly in runs of journals of local natural history societies and the Librarian would be pleased to accept any journals which members may wish to dispose of.

The field of local natural history reports has been widened by the inclusion in the Library of reports from Britain's Bird Observatories.

Another working party has evolved a classification scheme so that a catalogue may be produced for members and work has commenced on its compilation.

Thanks must be due to the Staff of Ealing Library and to Ealing Library Committee for their continued assistance with the administrative side of the Society's Library and for their financial help, particularly with the binding of periodicals and repair of books.

Instructions for Contributors

PAPERS should be submitted to the EDITOR (address in Programme) no later than the middle of February if they are to be considered for publication in the same year. They should be typed, with double spacing and a wide margin, on one side only of quarto paper. Submission in duplicate facilitates the essential process of refereeing. It also helps the Editor if the total number of words is pencilled in at the head of the paper.

Scientific names should be underlined, but headings and sub-headings only in pencil if at all. References should be listed at the end, in alphabetical order of authors' names, in the following standard form:—

MATTHEWS, L. HARRISON, 1952, *British Mammals*, London.

YOUNG, G. W., 1905, The Chalk Area of North-East Surrey. *Proc. Geol. Assoc.*, **19**, 196-206.

The corresponding references in the text would be (Matthews, 1952) and (Young, 1905).

Dates should be in the form June 9, 1964.

Line drawings should be submitted separately, in Indian ink on thick white paper or card, preferably 2× or 3× the size finally intended. Any lettering must be large enough to be clear when reduced, and all lines must be solid black, not pale or imperfect. Legends should be typed separately as they will be set up by the printer. The Editor should be consulted in good time if there is any doubt about the preparation of illustrations. Photographs can be accepted only after prior consultation.

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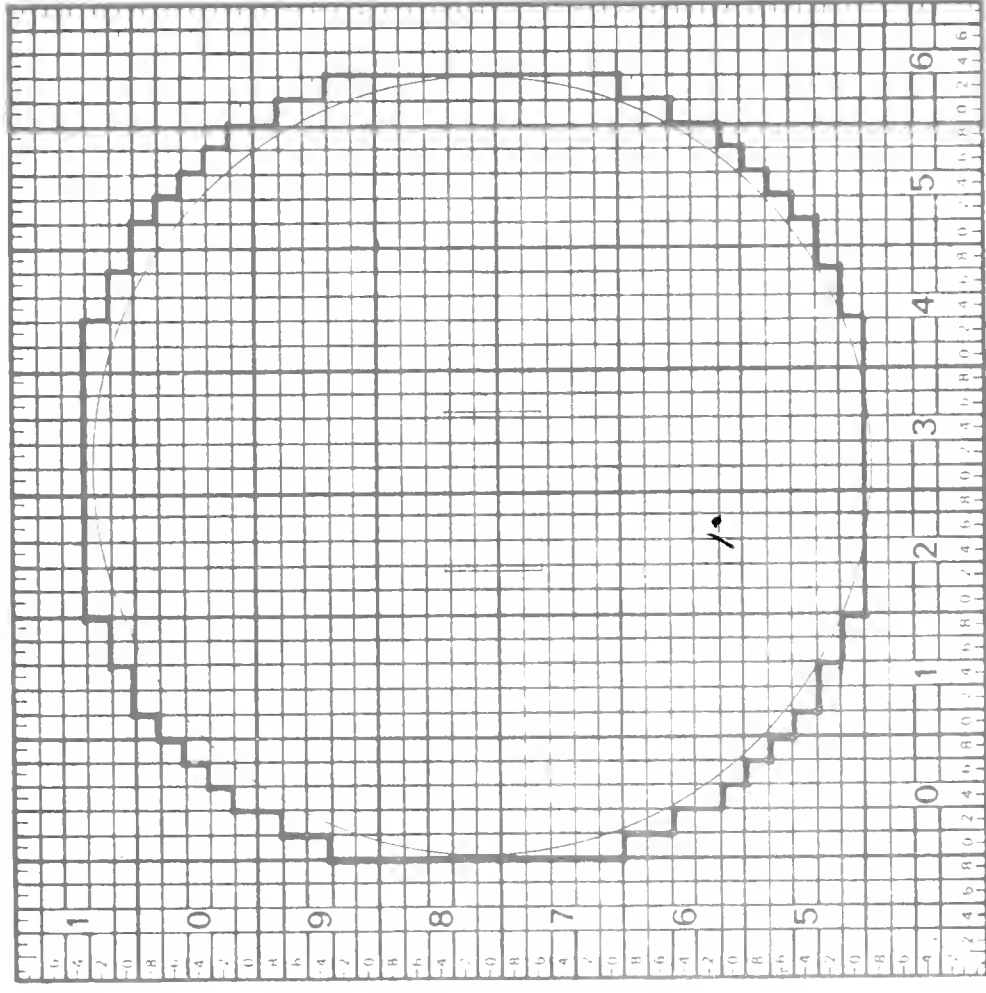
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